

THE RAILWAY GAZETTE

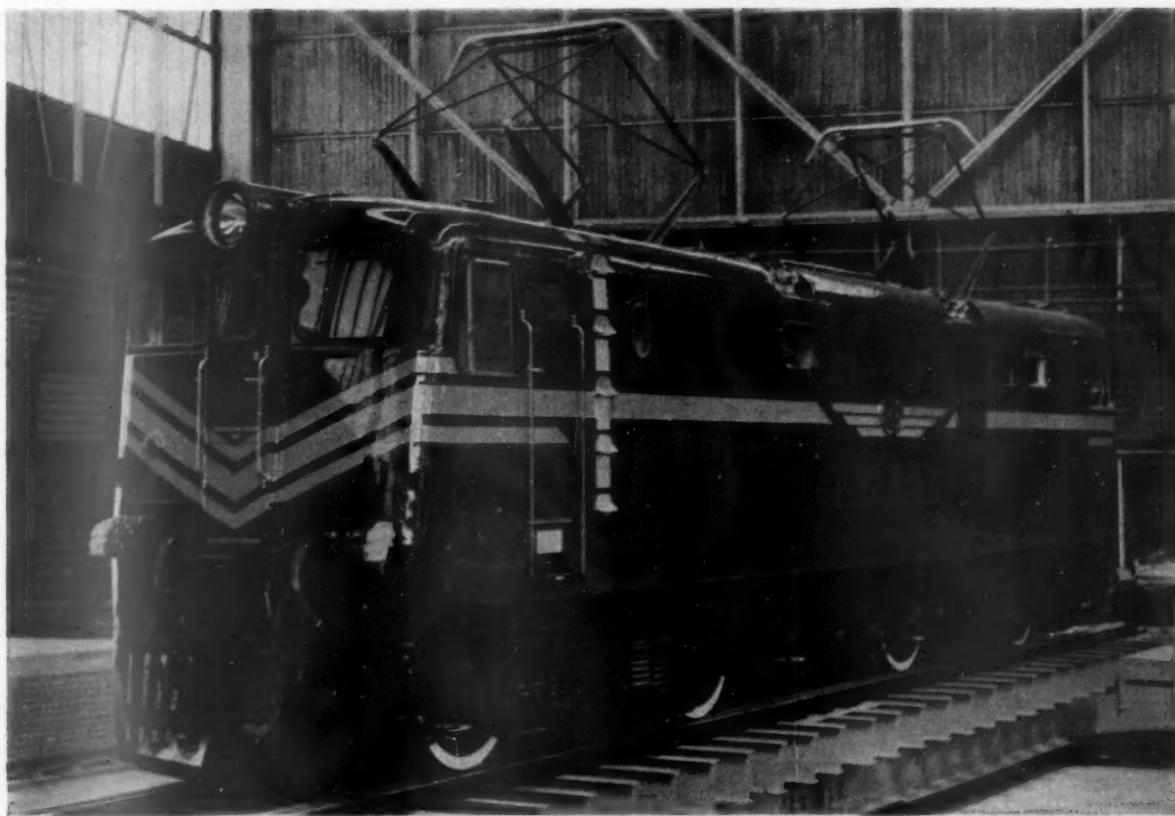
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35 Type 5.E.1. Electric Locomotives, built by METRO-CAMMELL, have recently been delivered to the South African Railways
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BELFORT

*... the real wood
veneer laminate with
the melamine surface*



Belfort Afvormosia used for panelling in the new Railway Coaches. Photograph reproduced by permission of London Midland Region, British Railways.

Designers have for centuries found that fine woods are the well-tested medium of their art.

In the field of design "Belfort," with its superb appearance and durable surface qualities is available in an extensive range of woods to appeal aesthetically to interior designers and railway carriage builders.

"Belfort" is ideally suited for every application where decorative wood surfaces are required.

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*For descriptive literature and samples, please
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BELFORT

Heat resistant

Stain resistant



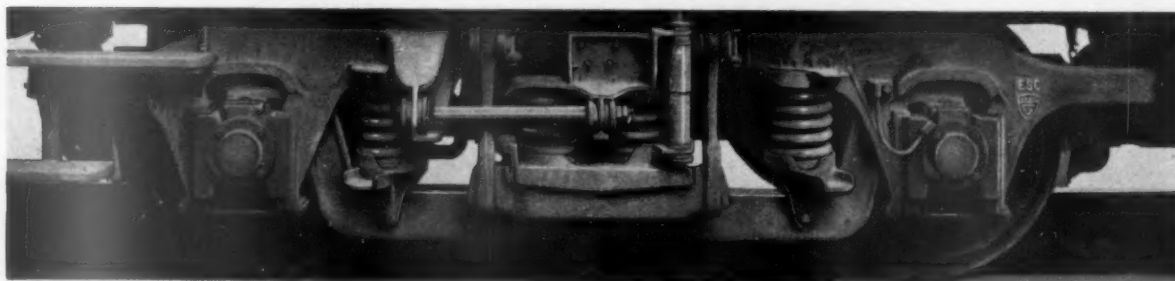
80 m.p.h. crib!

On the Master Cutler's 80 m.p.h. run from Sheffield Victoria to London King's Cross, vibration is practically undetectable. The Master Cutler Pullman, like the Leeds and Tyne-Tees Pullman trains, runs on **English Steel Commonwealth Bogies**, chosen by British Railways and the Pullman Car Co. Ltd., for their combination of great strength with an assured smoothness of ride.

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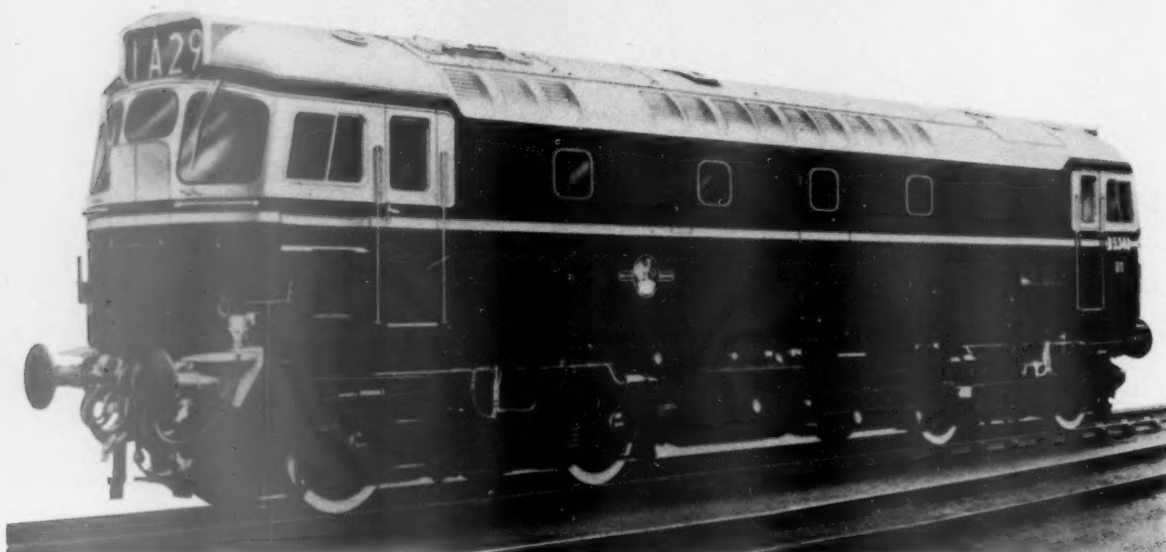


Photo by courtesy of Birmingham Railway Carriage & Wagon Co. Ltd.

This locomotive of 1,250 h.p. is one of a number now in service out of a total of 69 being built by Birmingham Railway Carriage and Wagon Co. Ltd.

All these are being fitted with



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STRAIGHT AIR BRAKING
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2

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MOST ECONOMICAL, HIGHLY EFFICIENT AND VERSATILE TAMPERS FOR A WIDE RANGE OF WORK

MODEL 260: Equipped with Diesel engine, large, extra-capacity generator and 4 Vibratory Tamping Units of the most powerful Jackson Track Maintainer type, this machine has maximum penetrating power in hard going, readily handles large ballast, badly fouled and cemented conditions. It's an excellent tamper for all work, whether it be smoothing, spot tamping or surfacing wherever maximum production tampers are not indicated. Very fast for new construction or any high lift work.

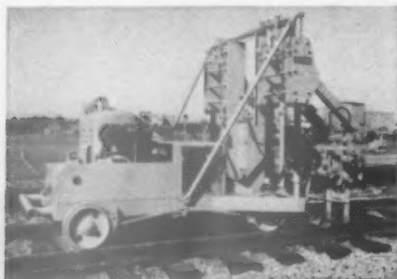
MODEL 104: Has gasoline engine and 4 TM1161 Vibratory Tamping Units. This is an excellent machine for work in all but the most difficult going . . . an ideal all-around tamper

for yard and branch line spot tamping, surfacing work, and emergency tamping. OK, too, for general use in small or soft ballasts. Excellent for new construction and high lift ballast insertions anywhere.

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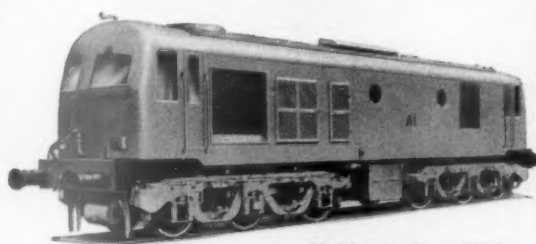
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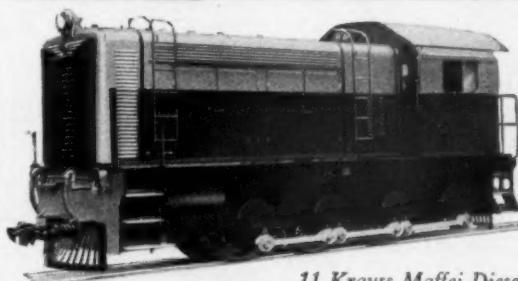
MODERN VACUUM BRAKE SYSTEMS

for diesel and electric locomotives

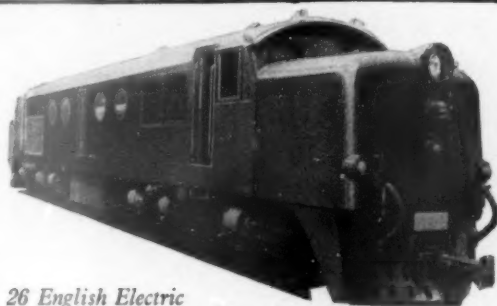
and for diesel railcar sets



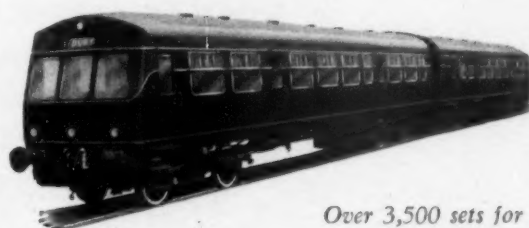
60 Metropolitan Vickers
Diesel Electric Locomotives for C.I.E.



11 Krauss Maffei Diesel
Hydraulic Locomotives for Siam.



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Over 3,500 sets for
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FOR LOCOMOTIVES

Gresham's Augmented Vacuum Brake System.
British Patent No. 732031. Write for List 79.

FOR DIESEL RAILCAR SETS

Gresham's Quick Release A.I.V. Vacuum Brake System.
British Patent No. 790657. Write for List 78.



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Extract from article in The Railway Gazette, June 16th, 1961.

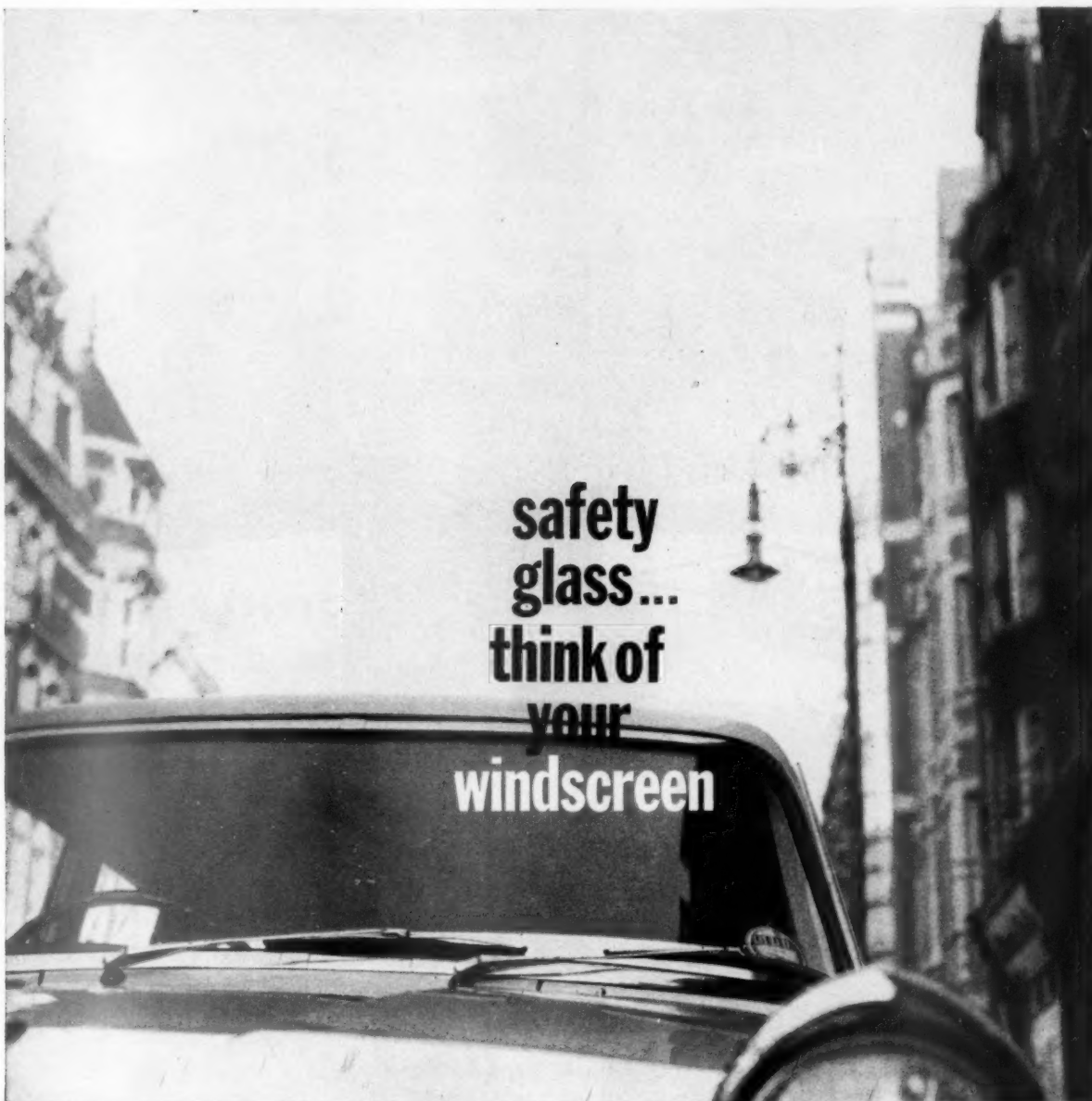
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IT IS ESSENTIAL FOR THE LINE AND LEVEL OF THE
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THERE IS NO SUBSTITUTE, SO FAR, FOR THE METHOD
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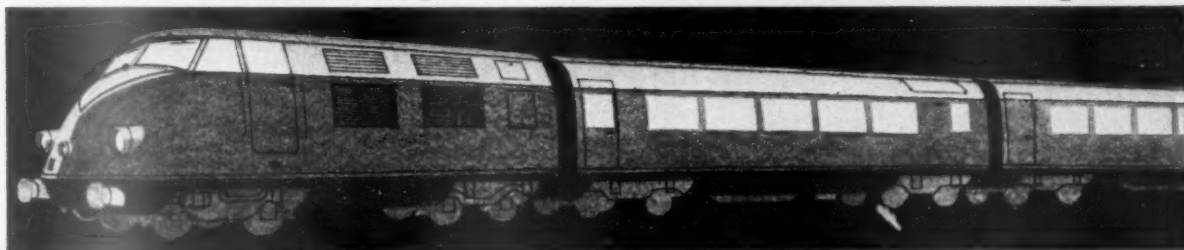
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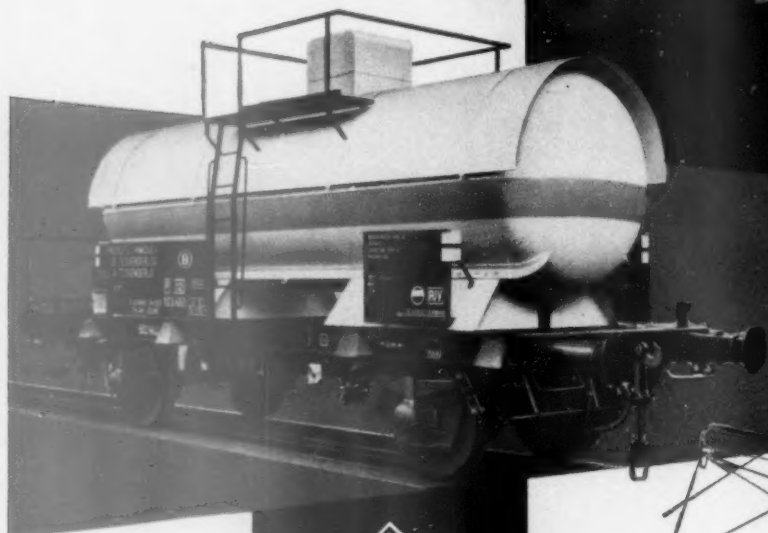
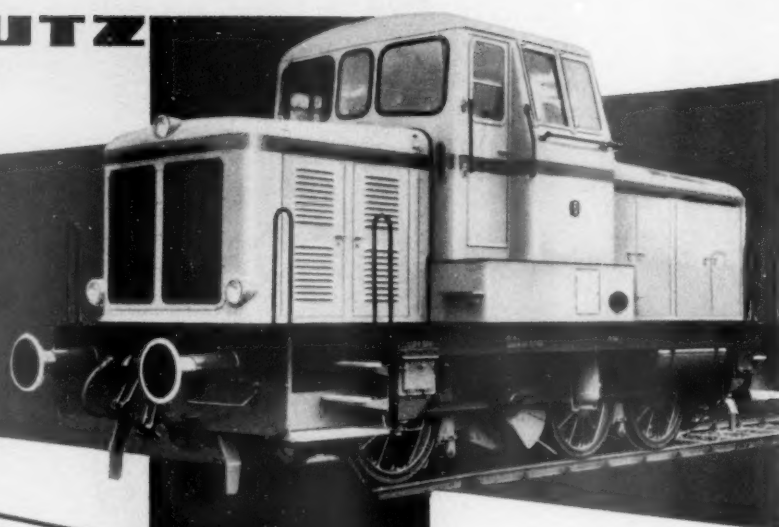
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'WALLICO' GAUGE GLASS RINGS
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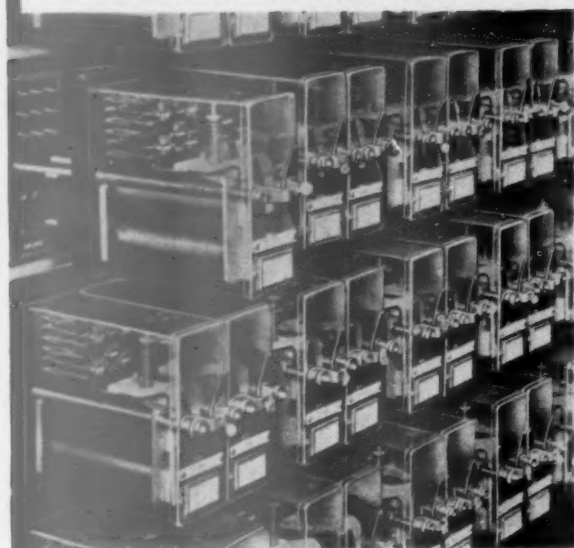
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(formerly MV-GRS)

**Pioneers in modern developments in railway
signalling and marshalling yard mechanisation**

some AEI-GRS firsts



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Also:

FIRST relay plugboards with quickly detachable terminals—Heaton Norris, L.M. Region. 1955.

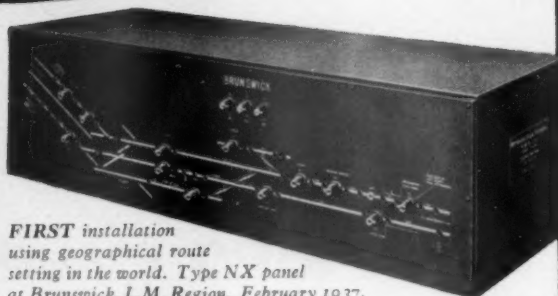
FIRST working demonstration of electronic control for signalling I.R.S.E. Presidential Address. April 1956.

FIRST cab signalling installation in Great Britain. Margam marshalling yard, Western Region.

FIRST automatic warning control inductors and suppressors. Installed between Kings Cross and Grantham, Eastern Region.

AEI-GRS continue to lead as they have done for over a generation.

*Photographs by courtesy of
British Railways.*



FIRST installation using geographical route setting in the world. Type NX panel at Brunswick, L.M. Region. February 1937.



FIRST automatic marshalling yard with preset speeds in Europe. Panel in control tower at Thornton, Scottish Region. January 1957.



FIRST fully automatic marshalling yard in Europe. Margam, Western Region. April 1960.



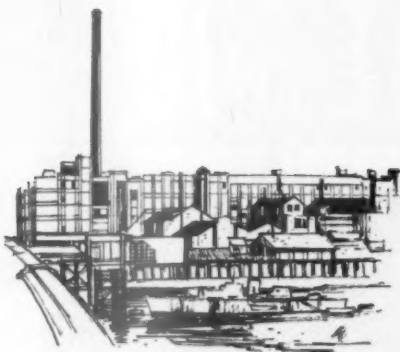
Associated Electrical Industries—GRS Ltd.

132-135 LONG ACRE, LONDON W.C.2.

TEMPLE BAR 3444


IT REALLY STANDS OUT

(There are 273 feet of it)*



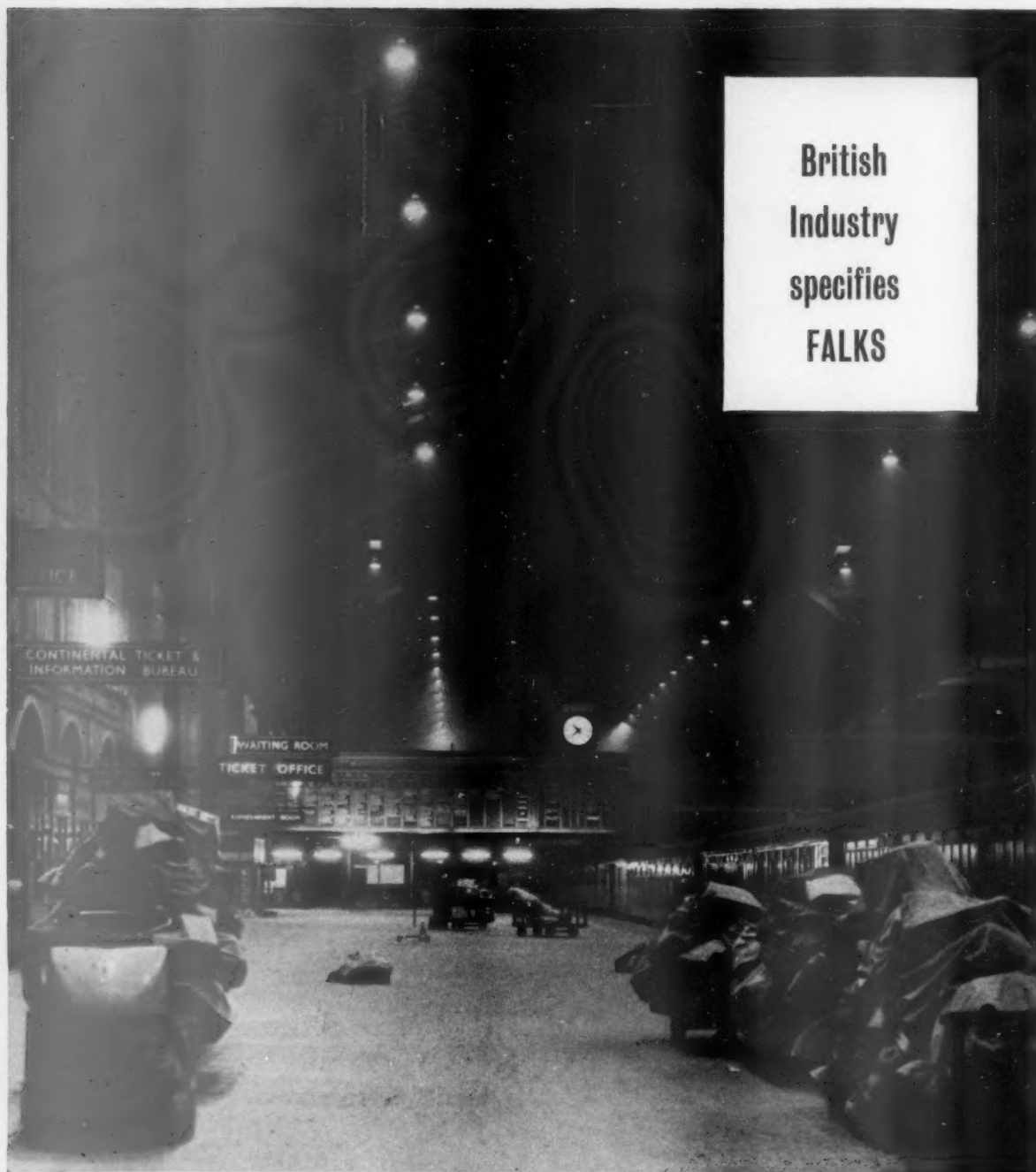
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Add a hundred feet or so to Nelson's Column and you have the height of the famous Morgans chimney at Battersea. Surprising what a little investigation can bring to light. Take what is produced at the foot of the chimney—take MORGANITE carbon. Carbon in ships, carbon in trains, carbon in motor cars, carbon in aircraft; carbon in electrical generation; carbon in current collection; carbon in washing machines and vacuum cleaners; carbon in telephones, pumps, radios and refrigerators; atomic carbon, mechanical carbon, electrical carbon—always carbon is somewhere at work. In the last fifty years, we have put carbon on the map. We have adapted it to the needs of so many industries that now our MORGANITE carbon products are known throughout the world. Their quality, reliability and consistency are outstanding.

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British
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Liverpool Street Station, British Railways Eastern Region. Installation designed by T. C. V. Miller Esq., Chief Mechanical and Electrical Engineer.

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Our expert lighting engineers based in all principal cities of the U.K., will without obligation, advise you on any lighting problem large or small and prepare lighting plans for your approval.

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PLANNED, EFFICIENT LIGHTING saves money all along the line

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Available with either cantilever or strut jib (with outriggers on strut version).

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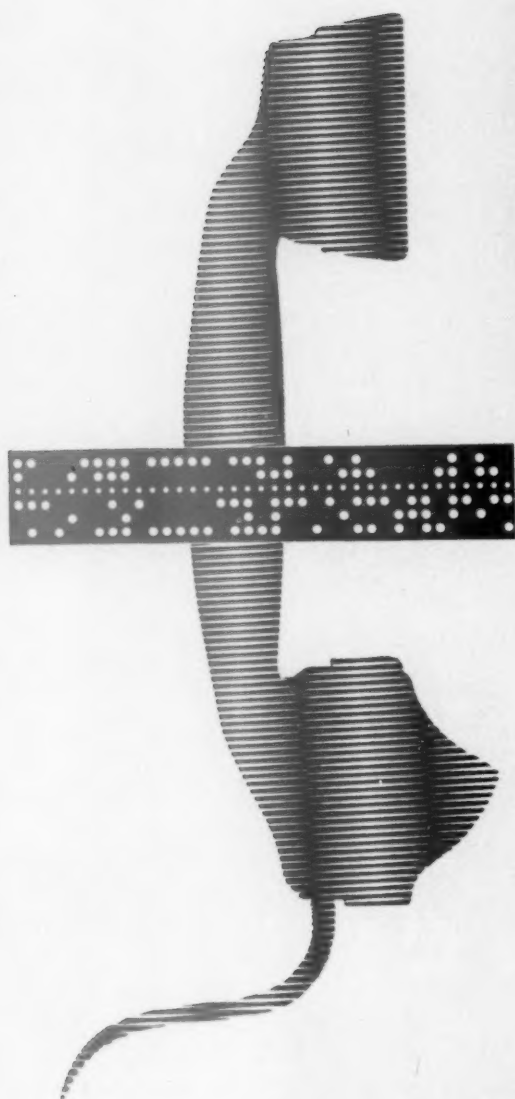
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COLES

CRANES

**THE NAME THAT
CARRIES WEIGHT**



FIRST RAILWAY MICROWAVE RADIO TELEPHONE SYSTEM IN BRITAIN

**300 Channels
between
Newcastle and York**

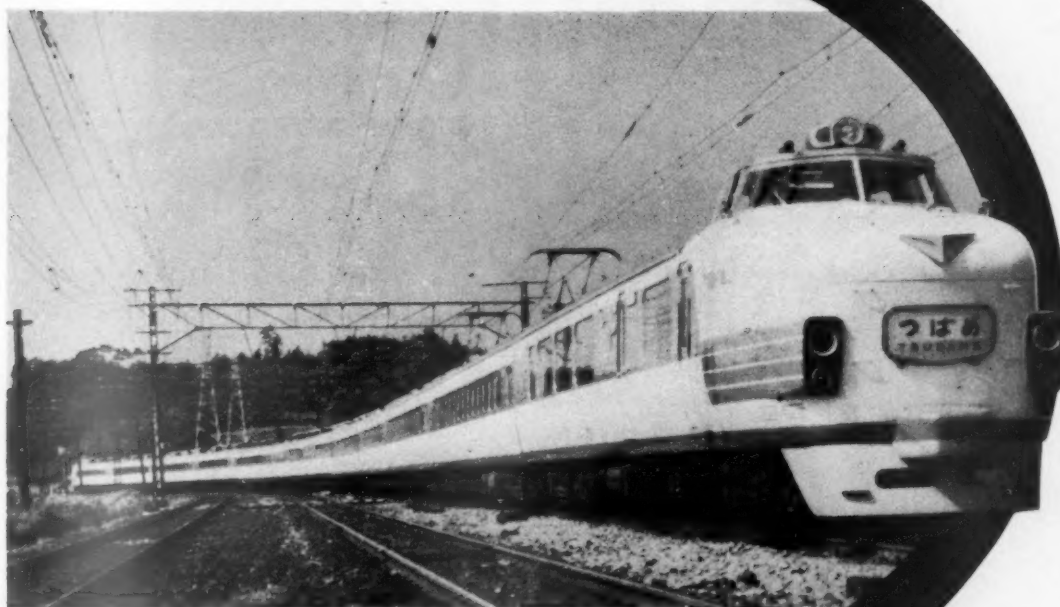
British Railways first microwave multichannel system from Newcastle to York via Darlington will have a 300 telephone channel capacity. The system allows for channels to be dropped off at intermediate points and can accommodate high speed data transmission.

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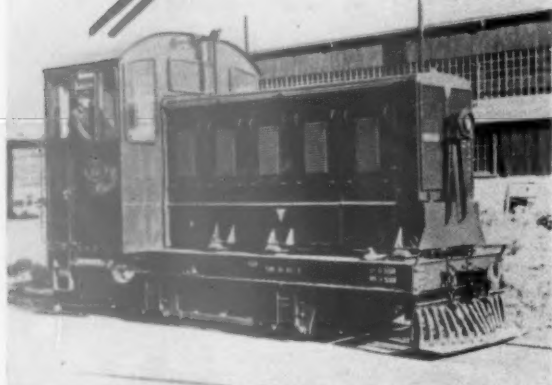
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POWER SHUNTING LOCOMOTIVES

operated by the Government Railways in

**NEW
ZEALAND**



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Uniting the Rail Traction Resources of A.E.C. and Leyland

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Using two impact wrenches for tightening chair-bolts more quickly.

Save time and money

WITH COMPRESSED-AIR POWER

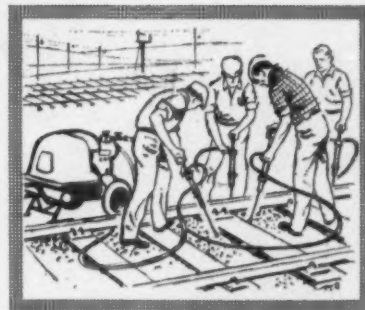
Manpower . . . time . . . money . . . how much are you wasting with out-of-date methods of permanent way and bridge maintenance?

A Hymatic-Hydrovane compressor will enable you to tackle track and bridge work with powerful pneumatic tools. Powered impact wrenches, spike drivers, tampers, rail saws, rotary drills, riveters, grinders, concrete breakers will make the whole job a simple mechanised one.

Already in use by British Railways and several overseas railways, the Hymatic model 98P100 can be operated without special training. It is easily handled. The compressor is normally operated at the trackside. When used without its under-carriage it gives plenty of clearance in the six-foot way.

Low first cost and cheap-to-run Hydrovane efficiency, with compactness, smoothness, speed and reliability—there are so many good reasons for choosing Hymatic.

Write for further details of the Hymatic-Hydrovane Type 98P100 for railway work.



98P100 can operate up to four tampers with power, speed and precision control.

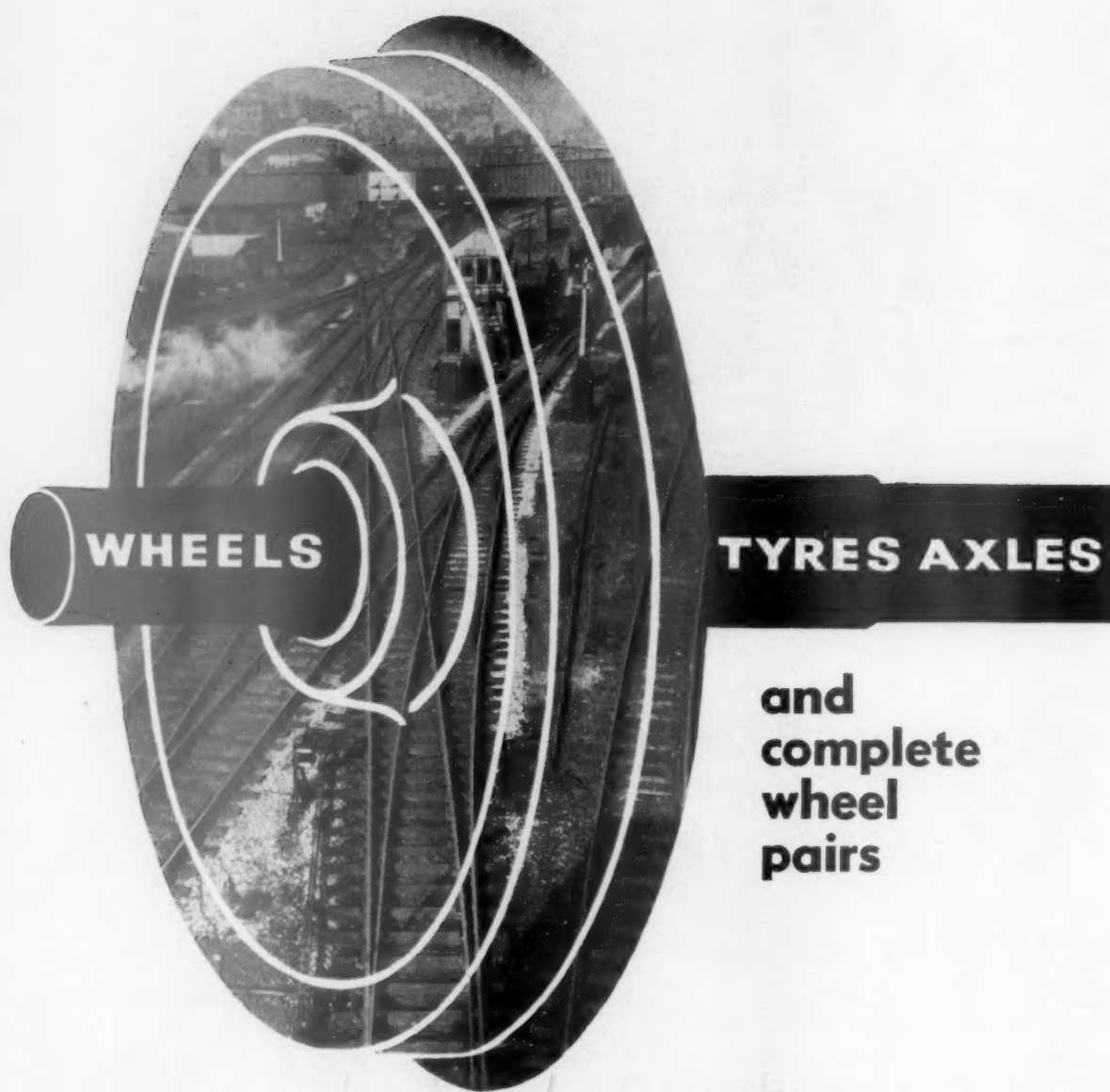
Hymatic

Quicker on the spot—
HYDROVANE COMPRESSORS

THE HYMATIC ENGINEERING CO. LTD · REDDITCH · WORCESTERSHIRE · REDDITCH 3621



TGA H214



for the railways of the world



Taylor **BROS. & CO. LTD**
TRAFFORD PARK STEELWORKS, MANCHESTER 17

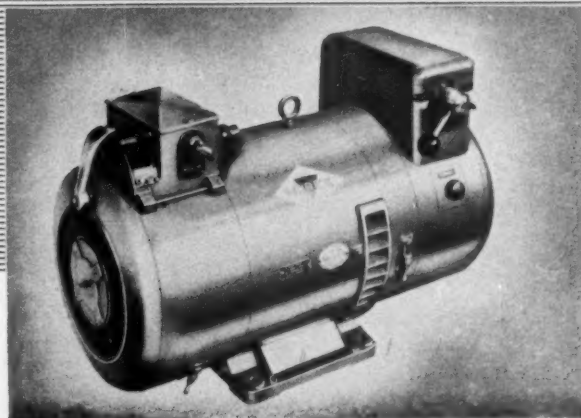
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Makers of Seamless Rings and Circular Die Forgings

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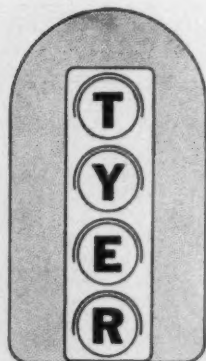
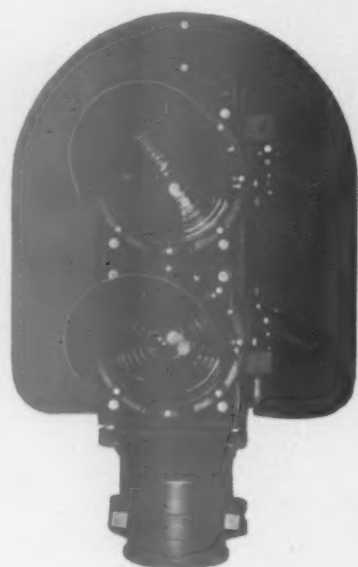
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high quality 300/400 amp
welding set—**



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MUREX WELDING PROCESSES LTD., WALTHAM CROSS, HERTS.

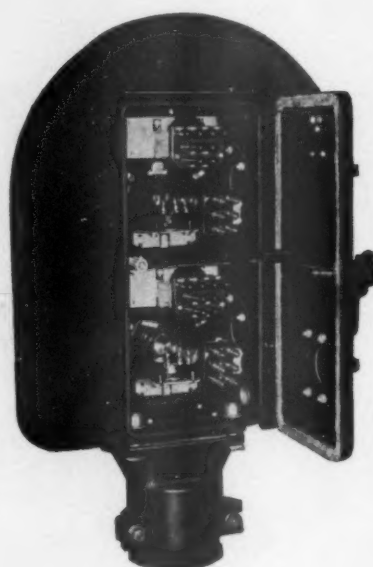


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ONE, TWO, THREE OR FOUR ASPECTS

LIGHT IN WEIGHT AND COST

(two aspect type)
(90 lbs. — £45)



LENS SYSTEM

8½" and 5½" dia. doublet stepped lens with moulded sector for close-up indication.

Permanently mounted at correct focal spacing in housing carrying lamp holder base, thereby maintaining focus on removal of lens mounting. Externally water-tight, internally dust-tight "Spreadlite" sector lens can be fitted.

LAMP HOLDER

limits the insertion of lamp in relation to contact pressure. Suitable for double or triple pole lamps.

CASEWORK

Light alloy with each aspect in a compartment, so eliminating stray indications.

Door hinged and stayed to right or left hand side, gasketed and secured in position by suretight clamp. Flat topped to cater for route or junction indicator. Cable entry at top, bottom or either side. Mounting arrangements for pole or gantry with simple transit and elevation adjustments.

BACKLIGHT

fitted if required (Sidelights and back light units interchangeable).

SIDELIGHTS

to left or right hand side as required.

HOODS

12", 18" or 24" in length.

BACKGROUND

24" wide, radial or square topped.

TERMINALS

O.B.A. nut type, with or without shrouds, in each aspect compartment and/or common panel at base of unit.

TRANSFORMERS

To B.S.S. as made by the Company. Provision made for fitting to side or rear of each aspect.

LAMP PROVING

Relays provided to suit all circuit requirements.

LAMPS

double or triple pole type to B.S.S.

ASPECTS:— ONE, TWO, THREE OR FOUR

WEIGHT:— 45 lbs, 90 lbs, 130 lbs, 180 lbs.

All signal units can be supplied complete with post base and ladder, or mounted on relay-battery case, complete with relays, batteries, charger and fully wired as a complete unit.

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Established 1851


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(Within the organisation of the Southern Areas Electric Corporation)



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It may be a long way home but every day Londoners find it's quicker by tube. As a matter of interest, two-thirds of the traction motors on trains in service on London's Underground are built by the G.E.C. With the completion of recent orders which total about £3,000,000, the G.E.C. will have supplied over 6000 railway traction motors to London Transport since 1925.

G.E.C. EXPERIENCE IS AT THE SERVICE OF LONDON TRANSPORT

THE GENERAL ELECTRIC COMPANY LIMITED OF ENGLAND TRACTION DIVISION BIRMINGHAM 6



Bristol Siddeley Maybach diesels power the new Hymek locomotives

Bristol Siddeley Maybach* diesel engines have been chosen for the new Hymek diesel-hydraulic locomotives. 95 of these Type 3 locomotives have been ordered for main-line use on British Railways Western Region. This now brings the total order placed with Bristol Siddeley for British Railways to 286.

DESIGNED FOR ECONOMIC OPERATION

Bristol Siddeley Maybach rail traction diesel engines range from 384 to 2,000 hp and embody design features which produce more efficient operation in terms of lower wear, greater reliability and easier servicing.

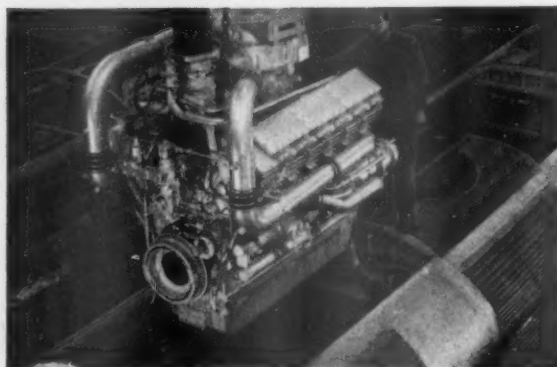
The immensely strong, roller bearing disc-webbed crankshaft, for example, is extremely rigid in its tunnel housing.



Disc-webbed, roller bearing crankshaft and tunnel housing

This results in very low main and big-end bearing wear. The pressure-oil cooling of the pistons gives effective heat dissipation which reduces liner and gas ring wear to a minimum.

Since the majority of components are identical in all models, spares stocks can be cut and servicing is simplified through interchangeability.



Maybach diesel engine being installed in D600 Class at Swindon.

WORLD-WIDE SERVICE

Maybach engines are in service all over the world, and have built for themselves an unsurpassed reputation as the most efficient diesel engines of today. This reputation, backed by the efficient Bristol Siddeley after-sales and spares service, offers the most satisfactory solution to all rail traction requirements.

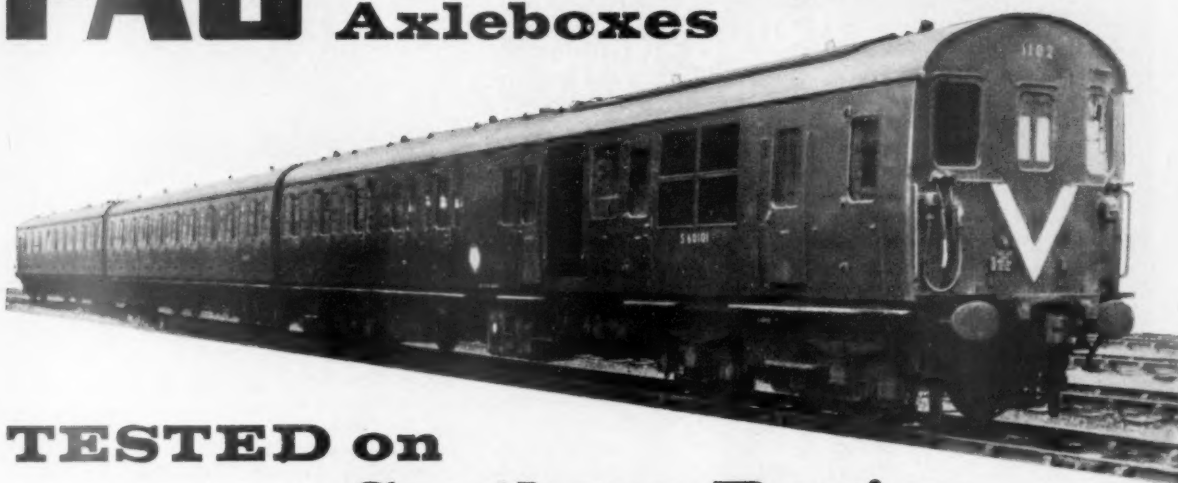
For further information, please write to: Power Sales Manager, Power Division, Bristol Siddeley Engines Limited, PO Box 17, Coventry, England. Cables: Brisidair, Coventry.

**Manufactured in the UK under exclusive licence from Maybach-Motorenbau GmbH.*

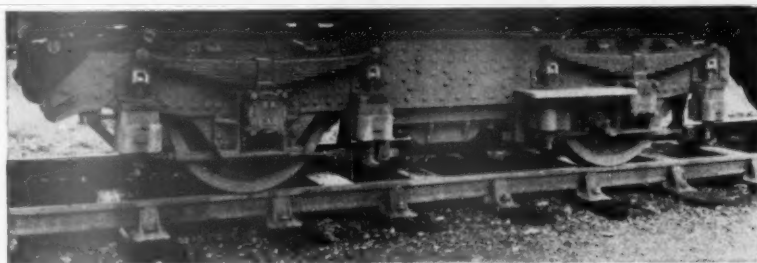
BRISTOL SIDDELEY ENGINES LIMITED

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DIESEL ENGINES - PISTON ENGINES - PRECISION ENGINEERING PRODUCTS

FAG Cylindrical Roller Axleboxes



TESTED on Southern Region



ABOVE: The diesel-electric unit fitted with FAG cylindrical roller axleboxes on Motor Coach and Driving Trailer.

LEFT: Close-up of one of the bogies after completion of 85,000 miles, at speeds of up to 75 m.p.h.

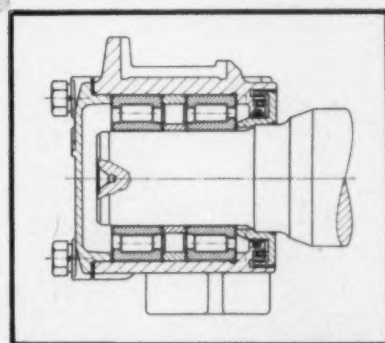
BELOW: The robustness and simplicity of the new design are readily appreciated from this cross-section

Photographs: Courtesy of British Railways, Southern Region

Axleboxes to a new design, developed from the U.I.C. approved design so extensively supplied to Continental Railways, were recently tested by the Southern Region over a route selected for severity of service. The test confirmed that FAG Cylindrical Roller Axleboxes are suitable for this class of stock, and examination after 85,000 miles indicates that they will have a long life.

This type of axlebox has the following outstanding features:—

- ★ Low overall frictional coefficient.
- ★ Low running temperatures over a wide speed range, with subsequent economy of lubricant.
- ★ Both radial and axial loadings are carried within the bearings, the radial forces being taken in the raceways and the thrust forces on the hardened lips of the bearings.
- ★ The cylindrical roller bearing, with its accepted high load capacity, is employed to best advantage.
- ★ Long life of roller bearing.
- ★ High factor of safety.
- ★ Simple axlebox construction with separable cylindrical roller bearing.
- ★ Easy and economical mounting, dismantling and inspection.
- ★ Mounting and dismantling readily carried out by induction heating equipment, so avoiding damage to axle journals associated with mechanical extractors.



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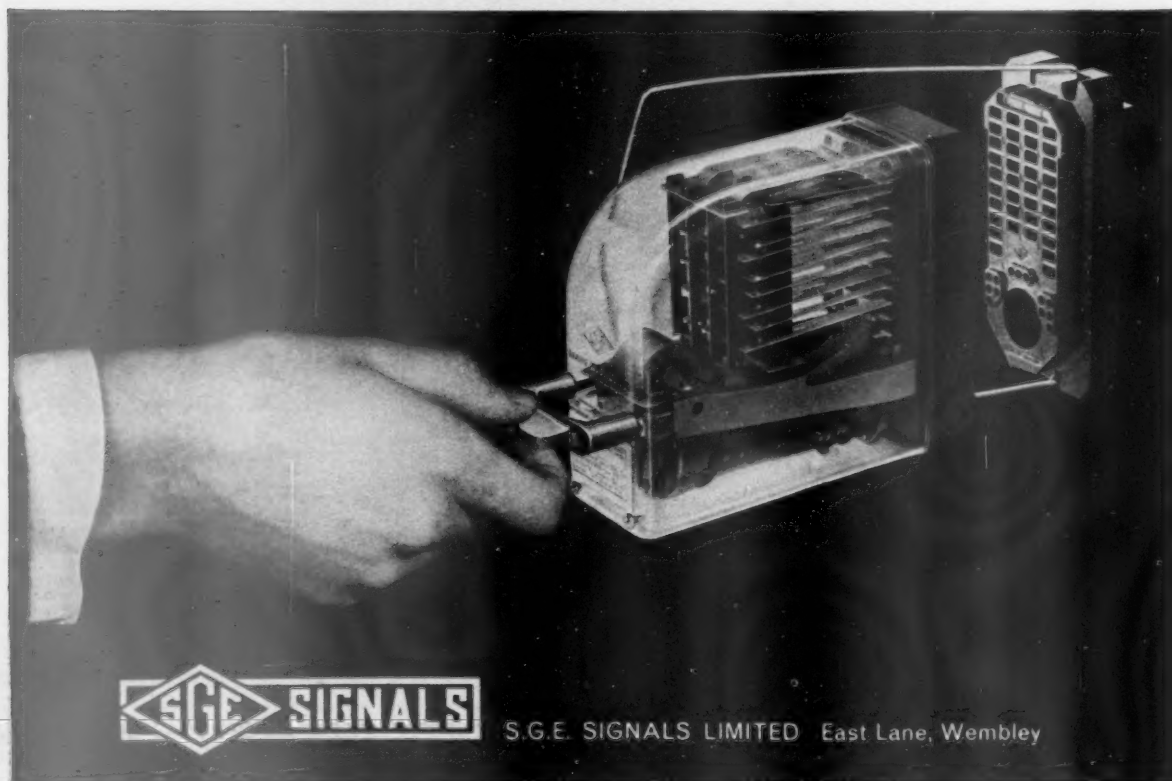
new developments in signalling by S.G.E.



For many years S.G.E. has actively pursued the policy of reducing the size and cost of railway signalling equipment. Now a new range of miniature plug-in relays has been successfully developed and is already being widely adopted by British Railways and by overseas users. Each of these relays occupies only about a quarter of the space required for the former standard size and the weight is reduced in the same proportion. The cost of relay rooms and location cases will thus be greatly reduced and the increased number of contacts available on these relays and the lower initial cost will further cut down the expense of modern relay interlocking control systems. Miniaturisation is but one aspect of a large scale research and development programme being carried out by S.G.E. which will make many important contributions to the modernisation of railway Signalling. Today S.G.E. can meet all railway signalling needs and will be ready tomorrow with new, better, quicker and safer apparatus and techniques to take care of the future.

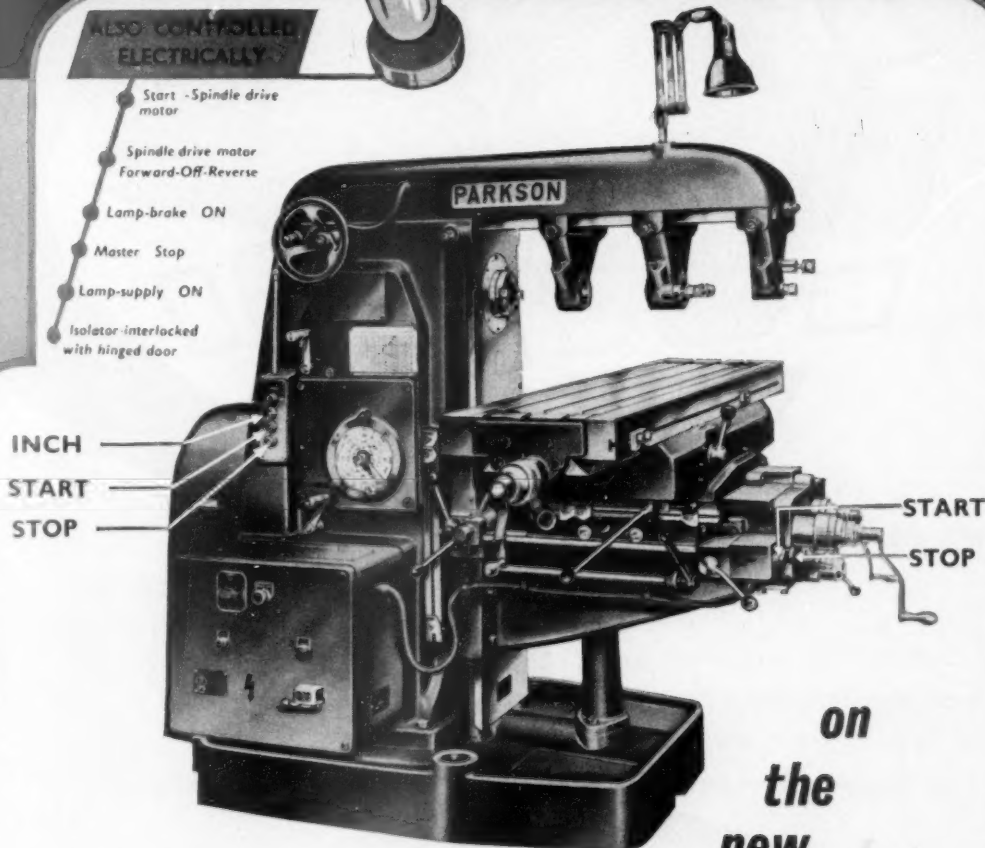
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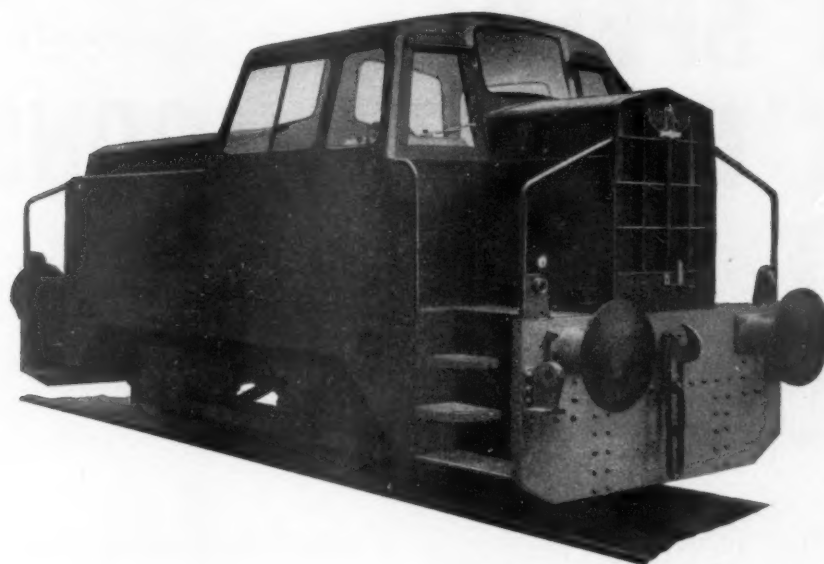
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The new Sentinel 34 ton O-4-O Diesel Hydraulic Industrial Locomotives now going into service are all fitted with Laycock-Knorr compressed air brake equipment and pneumatic sanding gear.

This equipment, together with various other types of railway vehicle braking apparatus used extensively on the continent and developed by Knorr-Bremse of Munich over the last half century, is now manufactured and offered by



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Laycock

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HIGH SPEED BULK CEMENT WAGONS BUILT BY GLOUCESTER

The Associated Portland Cement Manufacturers Ltd., have placed a contract for a large number of Bulk Cement Wagons with Gloucester. The wagons are designed for high speed operation over British Railways, and have a *load capacity of 27 tons, and a discharge rate of 7 tons per minute*. The tank and underframe are fabricated in aluminium alloy.

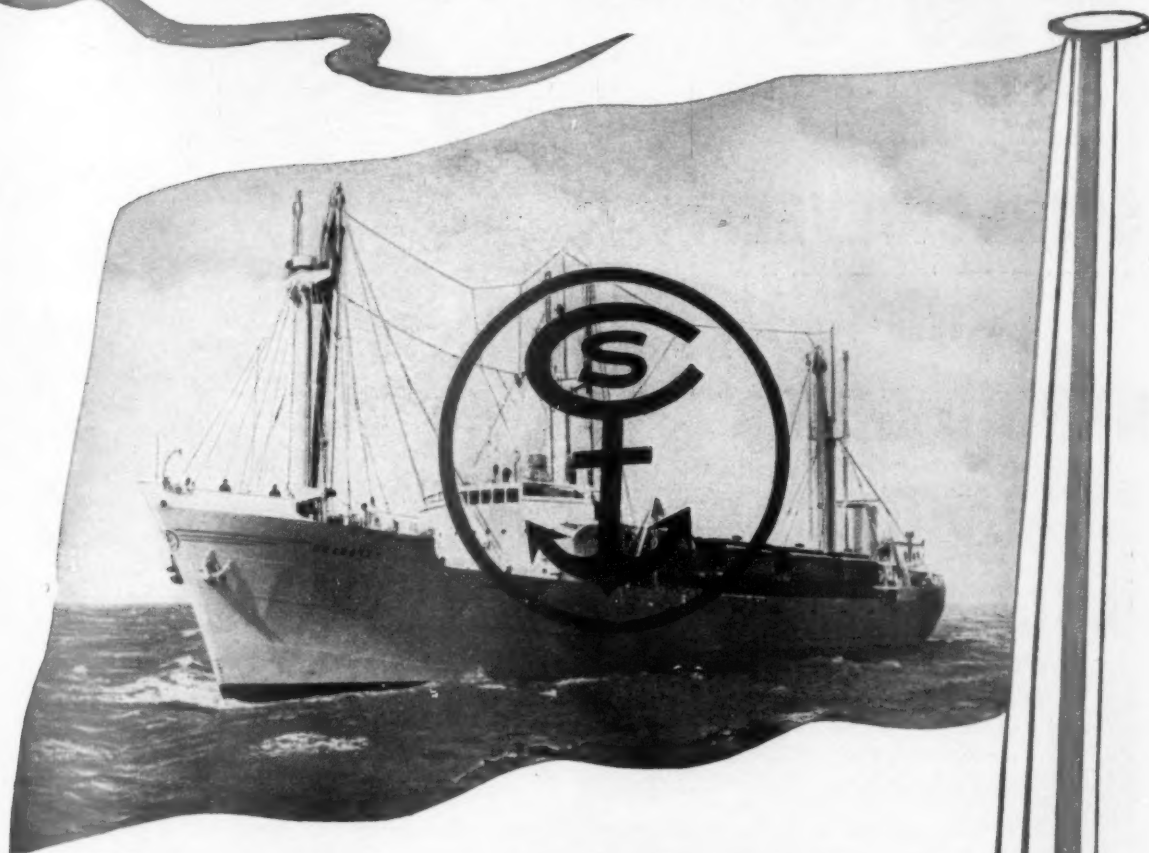


Photograph by courtesy of A.P.C.M. Ltd.

Gloucester Railway Carriage & Wagon Co. Ltd Gloucester · England · Tel: Gloucester 22111 Grams: 'Railcar' Gloucester
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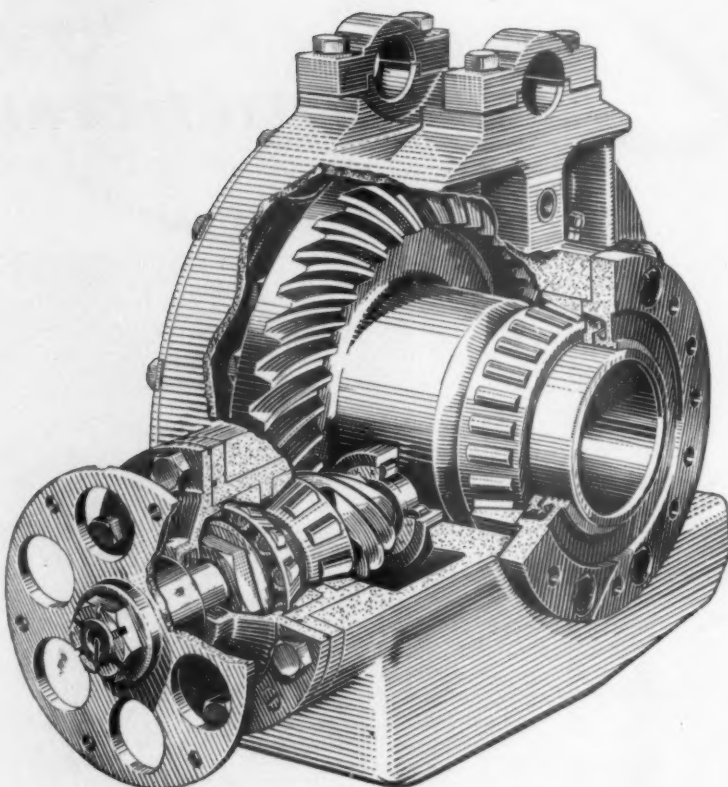
SPIRAL BEVEL

AND

HYPOID GEARS

AND

AXLE DRIVES



The right-angle drive, which now has so many applications for diesel and electric traction, is a job for the specialist.

ENV pioneered the spiral bevel and hypoid drives in this country and have over 30 years' experience in the design and manufacture of heavy duty right-angle drives.

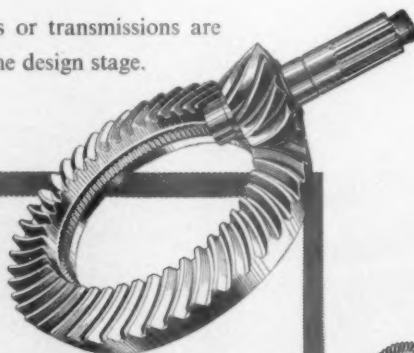
Production facilities include the most modern gear cutting and heat treatment plants, enabling precision spiral bevel and hypoid gears to be supplied with profile ground teeth when required for high speed applications.

Traction engineers and designers who need right-angle gears or transmissions are invited to communicate with ENV Technical Department at the design stage.

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AP 113

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CLASS 1600 HP DIESEL									
CYCLE No. 11									
No. 3									
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SATURDAYS EXCEPTED					SATURDAYS ONLY				
a.m.		a.m.			a.m.				
	K. Lynn Loco					K. Lynn Loco			
		7.36	L	KLT9					
	K. Lynn	7.46				Kings			
8.45	Cambridge	8.48			8.45	Cambridge			
9.56	7 LV (D. Exar)				9.56	7			
p.m.		p.m.							
	LV 7	12.36							
1.48	Cambridge	1.52							
2.54	K. Lynn	3.33		KLT					
4.36	Cambridge	4.40		SDL					
5.57	7 LV 10	6.45							
9.4	Ipswich	9.57							
a.m.		a.m.							
12.27	9 LV 13	(3.20)		SDL					
Works No. 4					Works				

Type 2,1600 h.p. Brush Diesel. Off King's Lynn Shed 7.36 a.m. . . . the day's Diagram . . . Work 7.46 UP express passenger to London, Liverpool Street via Cambridge. Daily maintenance (1 hour), at Liverpool Street. Work back to Lynn on 12.36 express passenger. Return 3.33 p.m. express passenger to Liverpool Street. Work 6.45 express passenger to Ipswich, and then back on the 9.57 local passenger to Liverpool Street.

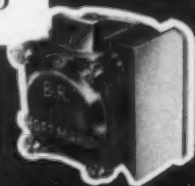
428 miles in a day, nearly 12 hours net running time—a typical diagram for the Type 2 Brush Diesel taken at random at March Motive Power Depot. Another day's mileage might be greater, might be less, for the Brush Diesel is equally capable knocking-off the miles handling a 12-coach express passenger, or working a menial go-stop-go loose-coupled goods.

BRUSH DIESEL ELECTRIC LOCOMOTIVES ARE POWERFUL, FLEXIBLE, RELIABLE; THEY ARE FITTED WITH HOFFMANN ROLLER BEARING AXLEBOXES AND SUSPENSION UNITS AND JOURNAL BEARINGS IN THEIR GENERATORS AND ANCILLARY EQUIPMENT

HOFFMANN

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THE HOFFMANN MANUFACTURING CO. LTD. (P.O. BOX 7), CHELMSFORD, ESSEX
TELEPHONE: CHELMSFORD 3151 TELEX NO: 1951



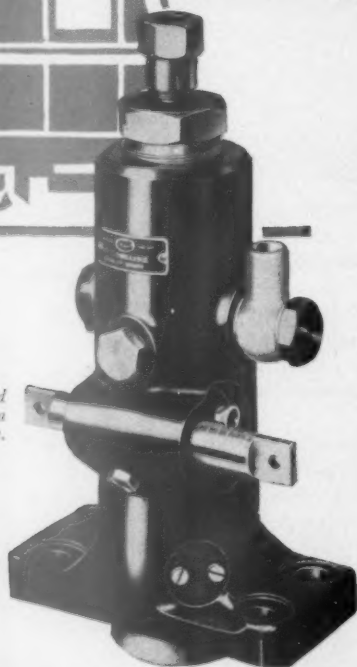
FUEL INJECTION EQUIPMENT

FOR EVERY TYPE OF DIESEL

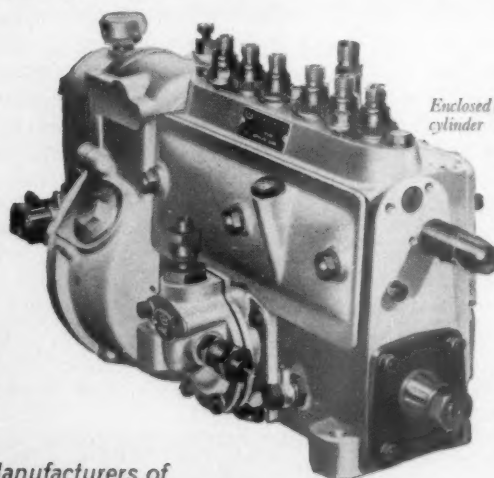


C.A.V. manufacture fuel injection equipment for main line, goods, shunting or narrow gauge locomotives, railcars or rail-buses. Manufacturing resources are unequalled, and engine manufacturers are offered the benefits of unrivalled facilities for research, design and development. C.A.V. equipment is backed by the world's finest service organisation covering over 100 countries.

Single flange mounted injection pump for a main line locomotive.



Enclosed camshaft, multi-cylinder injection pump.



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FUEL INJECTION EQUIPMENT

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Horizontal Pipe Flange Facing Machine

with 3 ft. 0 in. Squaring Table having
Power Feeds and Rapid Traverse

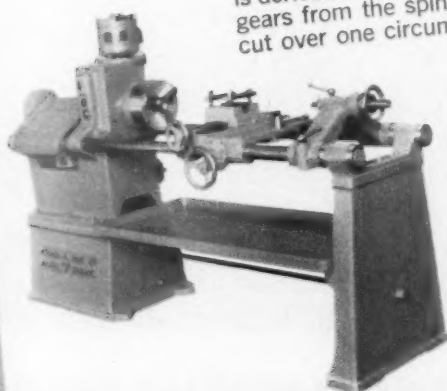


This machine obviates the need to utilise more expensive and elaborate plant for facing, recessing, spigoting, grooving and turning outside diameters of pipe flanges, valve bodies, etc. It can be operated by unskilled labour and whilst low in initial cost it is a highly productive machine capable of taking full advantage of carbide tooling.

SPECIFICATION:

Facing head diameter	... 24 in.
Six facing head speeds	... choice of 3 ranges
Two facing slide speeds (1 forward 1 reverse)	... choice of 4 ranges
Facing slide length of feed	... 9 in.
Table size	... 3 ft. 0 in. square
Table cross traverse	... 2 ft.
Facing head drive	... 5 h.p.

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A simple machine designed specially for oil grooving. The oscillating stroke of the saddle is derived from a crank driven by a train of gears from the spindle. A spiral groove is cut over one circumference on one half of the oscillation and back over one circumference on the second half making a figure eight. The stroke can be disengaged to cut ring grooves. Stroke is infinitely variable from 0-12 ins. Capacity, external work up to 5 in. dia. and internal work up to 7½ in. dia.

This 60 page catalogue illustrates and describes the range of K. & W. machines for the modern machine shop.

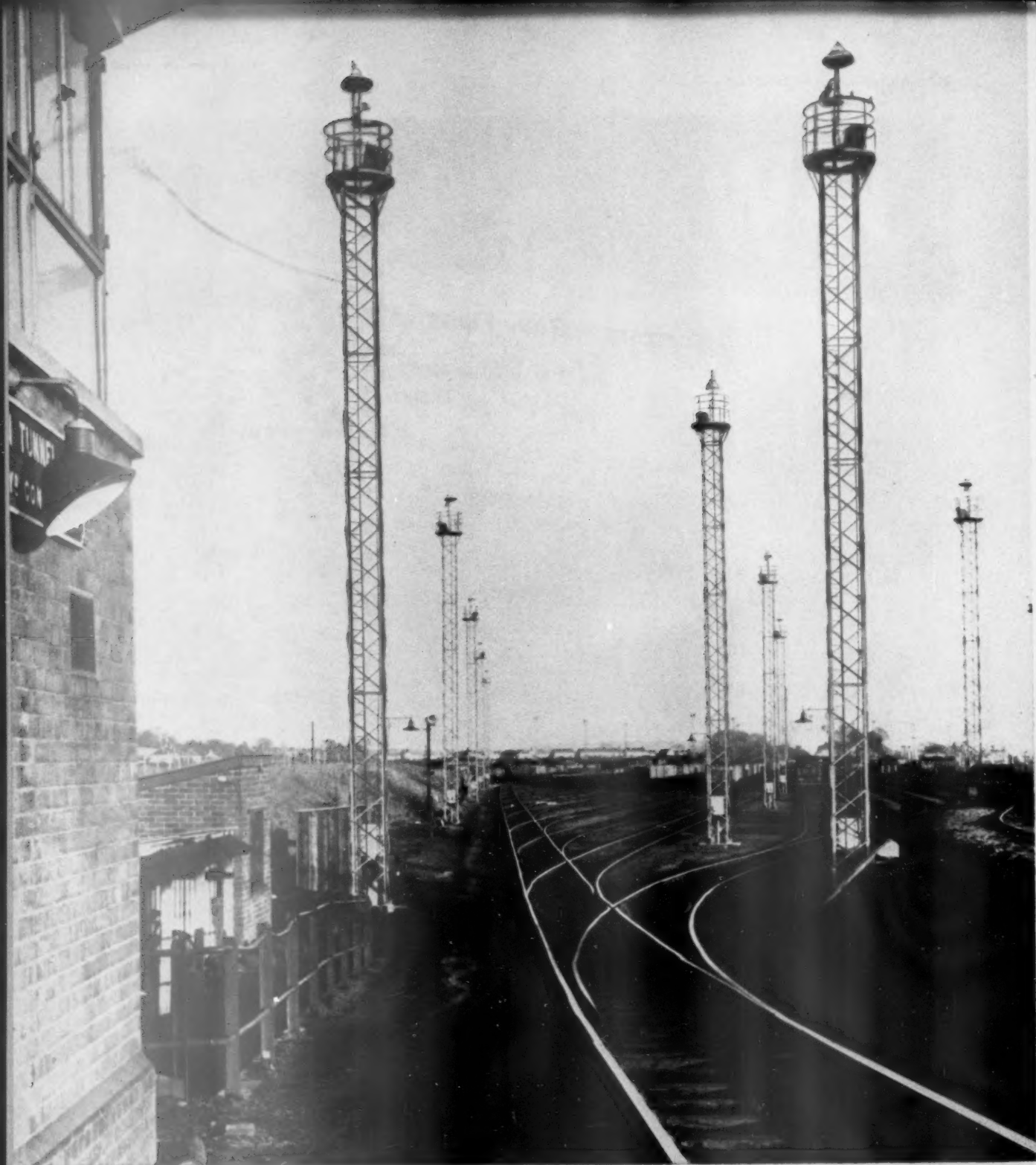


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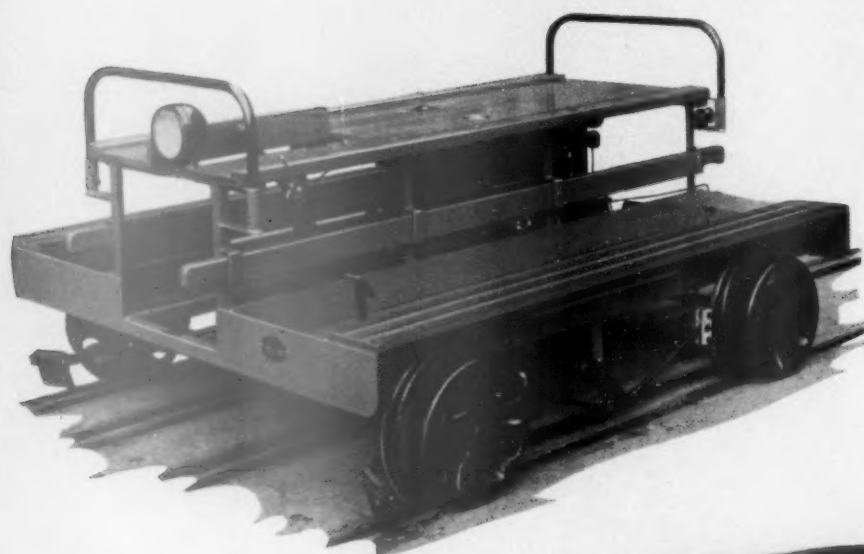
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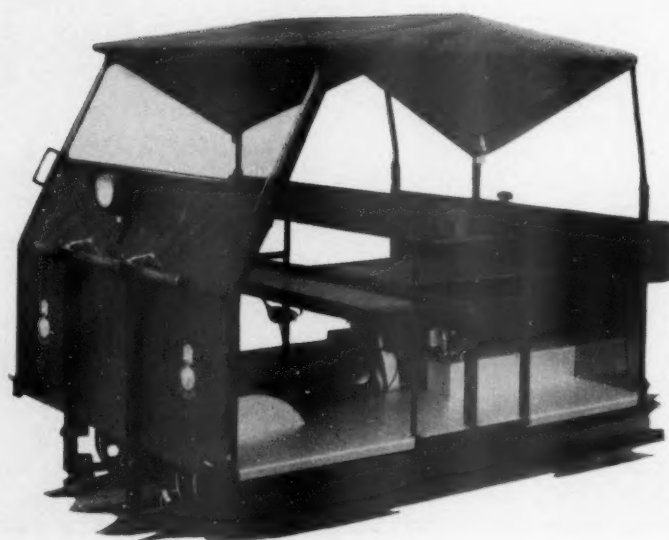
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The advantages of eliminating transmission belts or chains, with their expensive maintenance, has resulted in the design of our No. 4 Light Motor Trolley.

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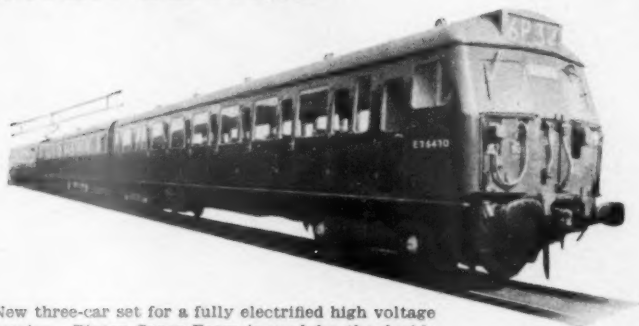
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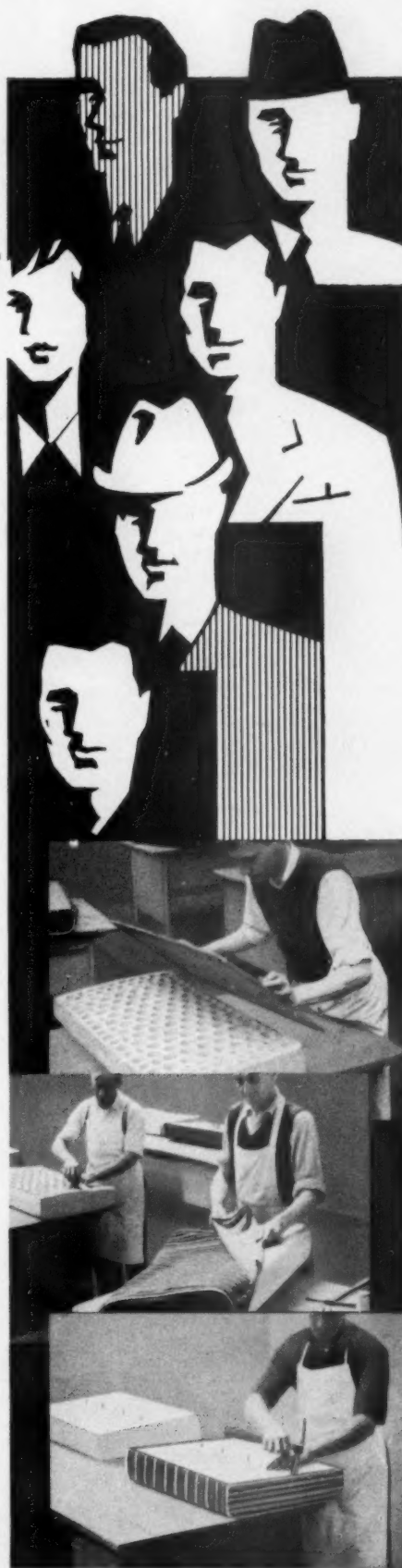


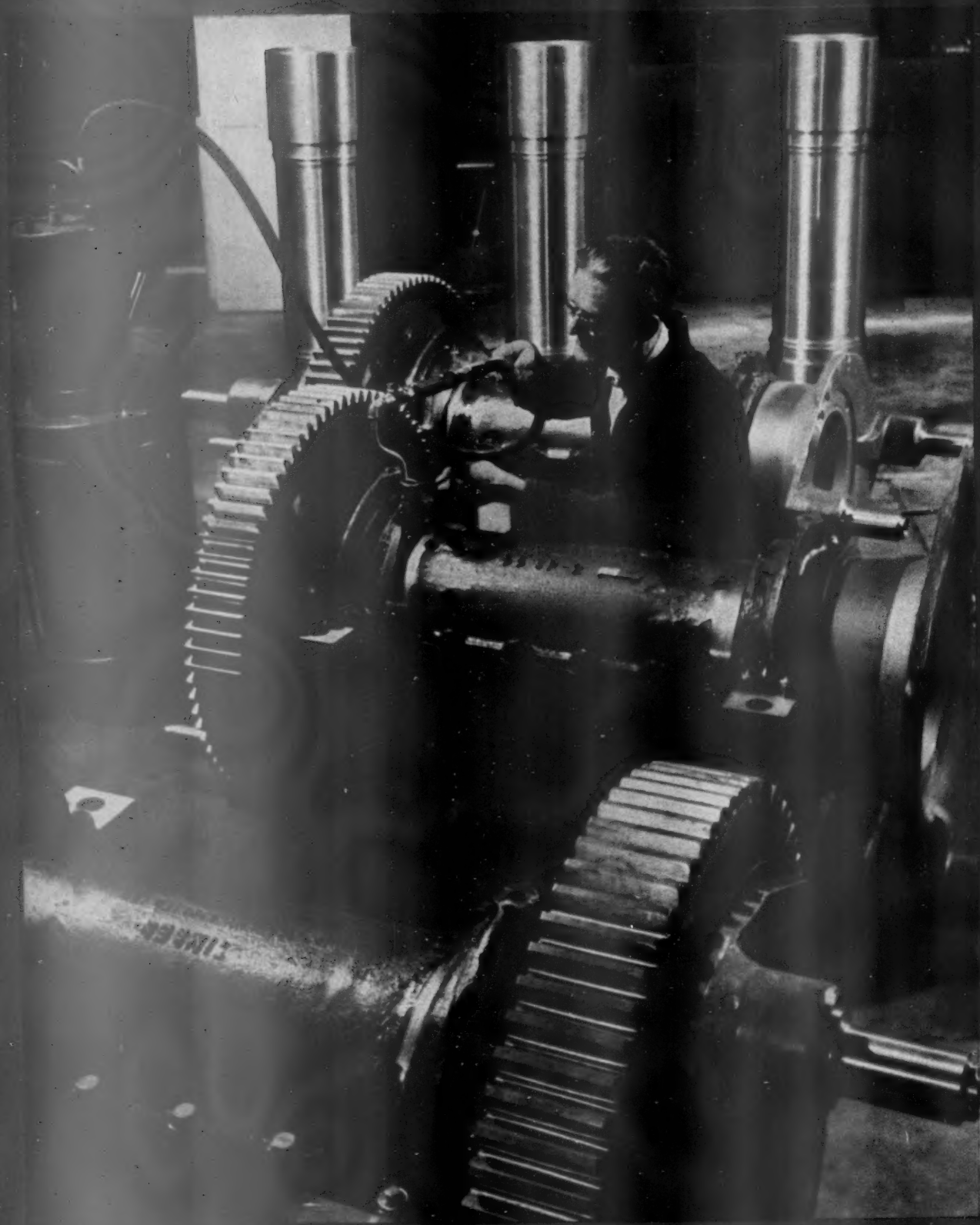
New three-car set for a fully electrified high voltage service. Bintex Super Foam is used for the double and single seat squabs.

Just three simple operations! One-piece cushion shape is cemented to base-board (1), made-up cover is fitted over (2), edges are tacked down (3).

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An international journal of management, engineering and operation

VOL 115

FRIDAY NOVEMBER 3 1961

No. 18

CONTENTS

	PAGE
Editorial Notes	497
Retired Railway Officers, 1901-61	499
Changing business travel habits	500
Western Australian Railways in 1960-61	500
Technical manpower	501
A gloomy statistical summary	501
Letters to the Editor	502
Publications received	504
The scrap heap	505
Overseas railway affairs	506
Moroccan Railways modernisation	507
Electronic computer centre, Schenectady, U.S.A.	508
Stafford-Crewe re-signalling in the London Midland Region	509
Cylindrical roller-bearing axleboxes in diesel trucks	511
Compacted asphalted ballast on the Rhaetian Railways	513
Developments in the U.S.S.R.	514
Personal	515
New equipment and processes	517
News articles	519
Contracts and tenders	521
Notes and news	523
Railway stock market and official notices	524

Editor: B. W. C. Cooke, Assoc. Inst. T.

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Development advisory service

THE World Bank has established a development advisory service which will provide its less-developed member countries with economic and financial advice from a corps of expert talent. The Bank has indicated that this service, and related organisational changes, form part of a general policy of enlarging its technical assistance and training activities. It believes that shortage of capital is not the only, or even the chief, obstacle to rapid economic progress: inexperience and lack of trained manpower at every level are held to be even more serious handicaps. The development advisory service; the existing Economic Development Institute, and the present technical assistance activities of the Bank will be integrated in a development services department, which also will have planning and liaison responsibilities. This department will be under the direction of Mr. Richard H. Demuth, Director of Technical Assistance & Planning for the Bank since 1954; the Associate Director will be Mr. Michael L. Hoffman, who will also serve as Director of the Development Advisory Service; Mr. Kenneth R. Iverson will be Assistant Department Head in charge of the Technical Assistance Staff, and Mr. John H. Adler will succeed Mr. Hoffman as Director of the Economic Development Institute.

Gloucester Railway Carriage & Wagon Co., Ltd.

SPEAKING at the seventy-third annual general meeting of the Gloucester Railway Carriage & Wagon Co. Ltd. on October 27, General Sir William Morgan, Chairman, said that, as a result of the past year's trading and the continued decline in demand, the company would cease to manufacture railway rolling-stock on completion of existing contracts. He blamed the position on the British Transport Commission's virtual

The Queen's speech

MEASURES foreshadowed in the Queen's Speech at the opening of Parliament on October 31 included a proposed Bill to reorganise British Railways and the British Transport Commission's other undertakings; the continuance of the Chancellor's present moves to achieve improved economic planning and to keep wages at a stable level, and vigorous action to promote exports. So far as the railways are concerned, little knowledge was added to the present public fund: the Speech merely confirmed the general terms of the White Paper on Nationalised Industries. Details of the legislation to implement these provisions are expected to be made public within the next few days. Referring to economic planning, the speech indicated that the Government would continue to seek the co-operation of both sides of industry in the better co-ordination of the national effort with a view to promoting faster economic

monopoly, both as buyer and producer. Unless suitable alternative work were found in the very near future, that part of the main works concerned with rolling-stock work would be closed down. Foreseeing the situation, a continual search had been made for other major products to replace rolling-stock business but, although various possibilities—some very promising—had been examined, the search had produced no useful result so far. An extension of the company's arrangement with Winget Limited was under discussion, and it was hoped that this would provide an additional volume of work sufficient to make an appreciable impact on available facilities.

International Factory Equipment Exhibition

OF PARTICULAR interest to manufacturers and users of railway equipment in that it will be opened by Dr. Richard Beeching, Chairman of the British Transport Commission, will be the Ninth International Factory Equipment Exhibition at Earls Court, London, during November 13-18 inclusive. At this exhibition, which is being sponsored by the London Chamber of Commerce, *The Financial Times*, and *Industrial Equipment News*, equipment and machinery will be on display by over 350 companies. Exhibits will include protective clothing and personal safety equipment; trucks, trolleys, and floor-polishing machines; an automatic cafeteria able to serve a four-course meal at the touch of a switch; mobile storage units; new vee-link belting; vacuum-sweeping machinery; aids to hygiene; thermal insulation devices; micro-measuring instruments; fork-lift truck attachments; a new conduit strip for sheathing electric cables; ultrasonic sensing and switching units, and a high-speed photoprinter with automatic separation at all speeds up to 60 ft. per min.

Factory efficiency and exporting

CONCURRENTLY with the International Factory Equipment Exhibition, the British Productivity Council is organising two conferences entitled "Efficiency in Today's Factory" (November 13-15) and "Producing for European Markets" (November 16). Speakers will include Sir Keith S. Joseph, Bt., Minister of State, Board of Trade; Sir Bertram Waring, Chairman & Managing Director, Joseph Lucas Limited, and Chairman of the British Productivity Council; Lord Fleck, former Chairman of I.C.I. Limited; Mr. W. J. Carron, President, Amalgamated Engineering Union; Sir James Hutchison, Bt., President, Association of British Chambers of Commerce and a member of the British Productivity Council; Mr. George Woodcock, General Secretary of the T.U.C. and a member of the British Productivity Council, and Mr. Frank Cousins, General Secretary, Transport & General Workers' Union. On the morning of November 17 there will be three conferences under the auspices of the Automatic Vending Machine Association these are: "Economics of vending," "Types of machines," and "Operation of machines."

Retired Railway Officers' Society

THE Retired Railway Officers' Society, which celebrates its Diamond Jubilee this year, held its annual autumn luncheon at the Hotel Russell, London, on October 31. At these functions, at a time when the promised legislation to re-organise the railways is imminent, the thoughts of its members must inevitably draw comparisons between conditions prevailing when they were active and those under which the railways are labouring now. They must be heartened to see the great modernisation schemes taking shape and beginning to pay dividends and no doubt will hope that any legislation passed will not interfere with those schemes. The fortunes of British Railways are always dear to railway officers, whether active or retired, and any proposals which are for the ultimate good of the undertaking will be welcomed and supported. The statement by Dr. Richard Beeching, Chairman of the British Transport Commission, and principal guest at the luncheon, that senti-

ment must not be allowed to stand in the way of reorganisation designed to benefit the future of the railways, should have their support.

Full-time Chairman for U.K.R.A.S.

THE United Kingdom Railway Advisory Service, a part of the International Inland Transport Branch of the Ministry of Transport, which was formed in 1959 to make available to railway administrations throughout the world the experience of the United Kingdom in building and running railways, has had a full-time Chairman since November 1. He is Brigadier A. E. M. Walter, who has been the part-time Chairman of the organisation since it was formed. Brigadier Walter's appointment is a sign of the growing value of British technical help to underdeveloped countries. This is drawn from the technical resources of the British Transport Commission, British Railways, the railway equipment industry, and British consulting engineers, and is supplied to any country on request. The modernisation of British Railways has provided experience and knowledge which is available to those countries which are considering the development and modernisation of their own railways, and the appointment of a man who has been one of the Minister of Transport's Inspecting Officers of Railways should ensure that this experience will be made available in the most helpful form.

London Midland Region re-signalling

AN EXTENSION of the colour-light signalling in connection with the electrification of the Western lines of the London Midland Region of British Railways was brought into use on October 8. This included a new power signalbox at Norton Bridge Junction and covers the 15-mile section of quadruple track between Whitmore and Stafford. The extension is a continuation of the resignalling work between Crewe and Whitmore which was brought into use three months ago. This further development marks the completion of the first 100 route-miles of line with full colour-light signalling and continuous track circuiting replacing oil-lighted semaphore signals and manual block working. It should result in a substantial improvement in traffic operation and greater all-round safety and reliability. The box at Norton Bridge Junction takes the place of six mechanical signalboxes and controls the four tracks between Madeley and Stafford, and the branch lines to and from Stoke-on-Trent. An article describing the signalling work and the installation at Norton Bridge signalbox appears elsewhere in this issue.

London International Engineering Exhibition

TO MEET changing European trading conditions, the Engineering, Marine, Welding & Nuclear Energy Exhibition will be transformed in 1963 as the London International Engineering Exhibition, to occupy both Olympia and Earls Court and comprise the largest international exhibition ever to be held in Britain. Taking place from April 23 to May 2, the exhibition has been timed partly to overlap the Hanover Fair in West Germany so that buyers from all over the world will be able to combine both events in one visit to Europe. The joint organisers are F. W. Bridges & Sons Ltd. and Industrial & Trade Fairs Limited, which organised the British Trade Fair in Moscow this year. The exhibition will cater for every type of engineering product. In general, Olympia will take the heavy exhibits, including a welding section comprising an exhibition in itself. At Earls Court, electrical engineering and a range of lighter products will be on display. Government information stands will be limited to 1,000 sq. ft. each.

Management and automation

SPEAKING at the National Conference of the British Institute of Management at Eastbourne on October 25, Mr. L. Landon

Goodman, Industrial Specialist of the Electrical Development Association, said that to have a progressive development strategy, top management must possess, at the very least, a general background understanding of science and sufficient knowledge of its own expanding technology to enable a balance to be struck between science and economics on which all major technological innovations should depend. Management had to initiate and it alone knew the ramifications of its own undertaking. Basically, its greatest difficulty lay in recognising possible applications of automation. It was obvious, therefore, that management had a responsibility to educate itself continually to new methods of work and to understand automation and the advantages it conferred. The main duties of management would become more concerned with people and less with paper, for automation was an organisation of work and an integration of operations. There was merit in the idea of local research and development group centres being set up to allocate projects and consultation work on behalf of its members.

Computing wagon repair costs

THE Baltimore & Ohio Railroad Company, alarmed by the fact that a quarter of its wagons were unserviceable, instigated a programme using an electronic computer to analyse data compiled by wagon inspectors and cost engineers. Information on unserviceable wagons was passed, on specially prepared forms, to the mechanical department. Cost engineers then estimated wage and material costs, a major consideration being the remaining life of a wagon. All the information available was put through the computer which produced three reports. The first showed estimated cost and man-hours involved in repairing all the wagons inspected—by individual wagon number, class, and type of wagon, and by various ranges of repair costs. The second listed repairs needed for each wagon, and the third gave the location of each unserviceable wagon. With these reports, which will automatically be kept up to date, the Baltimore & Ohio believes it has found a method for keeping control of all unserviceable wagons on its system as soon as trouble develops and for prompt assessment of the repairs required.

Supply of freight wagons in America

IN A message to key personnel, the President of the Illinois Central Railroad, Mr. Wayne A. Johnston, has drawn attention to the strange situation which prevails on American railways regarding the supply of freight wagons. Never was there a time when more progress was being made in the design of wagons to meet specific needs but there was a shortage of Class "A" freight wagons. The national fleet of goods wagons was not adequate for a sudden increase in traffic; more than nine per cent of wagons needed repair and a further six per cent were in bad order. This state of affairs was attributable to the low income of the railways. Mr. Johnston suggested to remedy the wagon deficiency a need existed for the present depreciation schedules to be revised. Present tax laws allow too long a life to goods wagons and other railway property. Another change which would be helpful would be the establishment of a construction reserve under which the railways would set aside a tax-deductible reserve out of which to buy needed equipment.

Trade with Canada

SPEAKING at the headquarters of the Federation of British Industries on October 19, Mr. John L. Bonus, F.B.I., representative in Canada and General Manager of the Canadian Association of British Manufacturers & Agencies, said that, in the first half of 1961, Canadians bought per head of population four times as much from Britain as had Europeans within the Common Market. Britain sold close on £215

million worth of goods to Canadians and bought approximately £359 million worth from them in a year. Mr. Bonus said that it should be remembered that Canada and the United States on last year's statistics were Britain's number three and number one export markets. In connection with Mr. Bonus' statement, it is interesting to note that, during 1960, Britain exported £589,199 worth of railway goods to Canada.

Retired railway officers, 1901-61

IN July, 1901, a number of retired railway officers received a letter which said: "One or two retired railway officials have conceived the idea of associating together the Old Railway Boys for an annual dinner or other gathering in London to revive old memories and old official brotherhood. The idea is confined to chief officials. Of course, the Old Boys would not exclude the present men in harness as guests." The inaugural meeting was held at the Railway Clearing House on November 12, 1901, when the originally-intended title of "Old Railway Boys' Association" was discarded in favour of the less picturesque but more dignified name of Retired Railway Officers' Society, which it has borne ever since. To commemorate the diamond jubilee year, a souvenir booklet has been prepared, giving some notes on the early history of the society, and listing the names of all who are, or have been, members. In his foreword, Sir John Elliot, a former Acting General Manager of the Southern Railway, and later Chief Regional Officer of the London Midland Region, points out that, although the whole story falls within "the lifetime of most of us" (we believe that two members are junior in years to the society), the year of foundation seemed as far away as the Middle Ages, socially and politically, if not industrially. He says: "If we cast our minds back to the beginning of the present century, gas lighting and foot-warmers were the rule on trains, telephones were few and far between, the motor car was a joke, railway clerks on a hundred a year wore top hats and carried gloves, and Kipling was the poet of the day. Above all, Britannia rules the waves and practically everything else besides."

It is evident that the early members desired their meetings to be as private as possible, and an early minute records the unanimous agreement that "it is very undesirable that any communications should be made to the public Press." An even earlier minute records the appointment of a deputation "to wait upon the General Managers at the Clearing House and ask for the privilege of quarter-fare tickets," presumably to enable them to travel to the meetings, but certainly indicating that retired officers did not then enjoy the privilege. An annual outing dates from 1903, with a trip to Calais to which "members can invite gentlemen visitors." There is no minute of the Calais excursion, but the experiment of the all-male outing was not repeated. By 1904 "members may introduce two visitors, either ladies or gentlemen." Claret 2s. a bottle, hock or burgundy 3s. 6d., whisky 3d. a glass, and brandy 4d. are prices indicative of the far-away feelings voiced by Sir John Elliot. Membership of the society seems from a scrutiny of the lists to be associated with longevity. Nonagenarians are numerous, and there are at least two centenarians. Sir John Elliot points out that two wars have inevitably altered our position in the world; road transport and aviation have "toppled railways everywhere from their pinnacle of power," and a social revolution has changed all our ways of living and thinking. Yet throughout, the strong tradition of comradeship and personal friendship among railway officers, not only in Great Britain but all over the world, has sustained us. In extending our own good wishes for the continued prosperity of the society, we would reiterate and endorse Sir John's words: "When our successors meet to celebrate the centenary of the society, they will have inherited a new railway system built on the foundations of the old, the most precious of which is friendship."

Changing business travel habits

IN the week in which the new Western Region timetable was introduced, "Peterborough" of the *Daily Telegraph* concluded various criticisms of it with a quotation from the letter of a business executive that "6.40 a.m. from Swansea (the South Wales Pullman) was too early for even the most hardworking businessman." No reference was made to the fact that the same train permits the traveller from the much larger city of Cardiff to leave at the relatively comfortable time of 7.50 a.m., and from Newport at 8.6 a.m., and that the timing is arranged to bring all the patrons of this service into London by 10.15 a.m., with practically the whole business day before them; but let that pass.

The interesting sequel to these criticisms was a letter from an officer of the British Army of the Rhine, published in a later issue, who pointed out that many businessmen in Dortmund get up in time to catch the 5.43 a.m. "Hans Sachs" to Frankfurt and Munich, the 5.48 a.m. "Paris-Ruhr" to Liège and Paris, and the 6.18 a.m. "Rheinblitz" to Stuttgart and Zurich, all among the fastest German services of the day. He added that on their return journeys such expresses as these often finish their journeys at a much later hour than evening long-distance business services in Great Britain.

Yet the early start of the Up "South Wales Pullman" is a witness to the fact that British business travel habits are gradually changing. When first put on in 1960, the "Midland Pullman" left Manchester at 8.50 a.m.; but by desire of its *clientèle* the starting-time has since been altered to 7.45 a.m., so that the users may be in St. Pancras by 11 a.m. instead of just after midday. For many years the first morning Western Region express from Plymouth to Paddington started at 7.15 a.m., but this winter's timetable has advanced the departure to 6.30 a.m., to permit a London arrival from West of England towns by 11.10 a.m. instead of 12.15 p.m. Several years ago the Southern Region put on a new service from Exeter at 6.30 a.m., reaching Waterloo at 10.8 a.m., an hour ahead of the 7.30 a.m. Up. Similarly the 7.12 a.m. from Bradford and 7.50 a.m. from Leeds in 1939 are now the 7.5 and 7.30 a.m. "West Riding," and with "Deltic" haulage the former 11.20 a.m. Kings Cross arrival has become 10.30 a.m.

All these developments tend in the same direction—that of encouraging the business executive to travel to see his clients, rather than entrust his affairs to the telephone or the post, provided that he can get back expeditiously at the end of the day. This quick return has never been difficult; but the preference of many such travellers is now to start back round about 5 p.m., rather than an hour or so later, as in pre-war days. It was during the war that this preference began, for air raids often held up outward-bound evening trains; and it continued after the war, owing to the unpunctual running of evening expresses in those difficult years.

Moreover, it still continues, for today such trains as the 4.20 p.m. from Euston to Manchester, the 4.45 p.m. "Shamrock" to Liverpool, and the 5.10 p.m. from Paddington to Birmingham, all load as heavily as 6 p.m. "Mancunian," the 6.10 p.m. "Merseyside Express," and the 6.10 p.m. from Paddington, which formerly were the principal evening trains. Experience also has proved that suitable starting times for the Western Region Pullmans out of Paddington are 4.50 p.m. to Wolverhampton and 4.55 p.m. to South Wales; though admittedly the "Bristol Pullman" start has been altered this winter from 4.55 to 5.45 p.m. The later trains mentioned above are still heavily patronised, so that there would appear to be a steady increase in this type of business travel.

While for many years past reasonable facilities have been provided to bring business executives up from the Provinces to London by midday or soon after, and to return them home in the evening, not till after the 1939-45 war were serious steps taken to reverse the process. Up to 1939 it had been possible to make fast evening journeys to London by such expresses as

the L.M.S.R. "Comet" from Manchester and 5.25 p.m. from Liverpool, and by the L.N.E.R. "Coronation" from Edinburgh and Newcastle, but there were few balancing early morning facilities in the opposite direction, but pressure exerted in 1952 by the Associated Chambers of Commerce has some substantial results.

In the autumn of that year new expresses were put on at 8 a.m. both from Euston to Liverpool and Manchester and from Kings Cross to Leeds and Bradford; a year later the latter train was extended to Darlington and Newcastle and was also stopped at Retford to give a 3 hr. connection to Sheffield. By the autumn of 1956 the patronage extended to this venture was sufficient to justify replacement of the Newcastle portion by a new 7.45 a.m. "Talisman" to Edinburgh, first stop Darlington; a Newcastle arrival at 12.19 p.m. gave businessmen nearly 6 hr. in that city before returning, if they so desired, with the up afternoon "Talisman." With the early morning trains stops at Watford and Hitchin were included, to pick up passengers in the outer London area, and similar stops to set down with the return evening workings; at Watford, in particular, stops have now become established practice both with Down early morning and Up evening expresses.

Today the greatly accelerated 7.45 a.m. "West Riding" from Kings Cross gives access to Sheffield by 10.35 a.m., Leeds by 10.54 a.m. and Bradford by 11.21 a.m.; the 8 a.m. "Talisman" is into Darlington at 11.51 a.m. and Newcastle at 12.36 p.m.; next door from St. Pancras there is the 7.55 a.m. "Palatine" to Leicester, Derby and Manchester; and Euston has its 7.45 a.m. "Lancastrian" to Manchester and Liverpool. It is possible to leave Paddington at 7.45 a.m. for Bristol and 7.55 a.m. from South Wales, though these are old-established services and not particularly fast. An outstanding development in the new Western Region winter timetable is the advance in the "Inter-City" departure out of Paddington to Birmingham and Wolverhampton from 9.0 to 8.20 a.m., and of the first West of England express of the day from 9.30 to 8.30 a.m. These trains may not have as early starts as those of similar expresses in Germany and other European countries, but they do afford striking examples of modern trends in British business travel.

Western Australian Railways in 1960-61

THE results of working the Western Australian Government Railways during the year ended June 30, 1961, indicate a very satisfactory position when compared with the previous year. Earnings reached the high level of £16,537,848, an increase of £1,499,584 over the preceding year. At the same time, operating expenses were £15,551,297, an increase of only £143,093. The result was an operating profit of £986,551, this being the first time that earnings have exceeded operating expenses since 1946. This satisfactory result has been achieved by reason of the increased traffic handled and a careful watch over expenditure, particularly on the number of staff employed. Last year's grain haulage was a record.

Comparative financial figures in £A. for the last two years were:—

Source	1959-60	1960-61
Earnings	15,038,264	16,537,848
Operating expenses	15,408,204	15,551,297
Depreciation	1,686,962	1,814,517
Interest	2,339,789	2,420,998
Deficit, after paying depreciation and interest	4,396,691	3,248,964
Capital investment	50,901,365	52,266,549

The percentage of operating expenses to earnings was 94.03 per cent, a decrease of 8.43 per cent. Train-miles run were 7,818,746, a reduction of 143,134, entirely in country passenger trains, some of which have been cancelled and the service operated by Railway Road Service buses. Goods-train mileage showed an increase of 93,159. Road bus-miles run totalled 1,514,202, an increase of 186,035 over the 1959-60 figure. Earnings per train-mile compared with the 1959-60 figures in

brackets were 493.6 pence (440.4 pence) and operating expenses 463.45 pence (451.81 pence).

Passenger-journeys numbered 12,927,174, a decrease of 1,212,780, there being decreases in both suburban and country rail passengers, but a small increase in bus passengers. The increasing use of privately-owned motor vehicles is affecting passenger travel despite improvements in services and amenities designed to attract patronage to rail. As a result of an increase in fares last year, however, the drop in coaching earnings was only £7,130.

Paying ton-mileage of goods and livestock was again a record, the 1959-60 record figure of 705,245,196 being increased to 747,579,727. Likewise, total tonnage of goods and livestock carried increased from the 1959-60 record figure of 5,208,834 to 5,367,988. The major item of goods traffic was wheat, of which 1,661,117 tons were hauled. The corresponding figure of 1959-60 was 1,434,383 tons. The average haul for all traffic was 154.68 miles (155.59 miles in 1959-60), total earnings from goods traffic was £13,774,550 (£12,251,010) and earnings per ton-mile 4.42d. (4.17d.).

Principal traffics were coal, representing 6.93 per cent of the total ton-mileage; timber 9.9 per cent; fertilisers 9.04 per cent; wool, 2.13 per cent; wheat 29.97 per cent; grain 7.05 per cent; ores and minerals 7.64 per cent; oil in tank wagons 3.6 per cent; and general goods 10.29 per cent. Average mileage of line open was 4,123, an increase of 3 miles. The average staff employed was 12,612, a reduction of 469. The mean population of the State was 740,000, an increase of 15,000 and equal to 179 persons per mile of railway open.

Technical manpower

LACK of scientific and technical manpower has become one of the most urgent national problems. In spite of the provision of increased technical educational facilities, this shortage continues, and the question of whether efficient use is being made of the scientific and technical manpower at present available naturally arises. In his presidential address before the Institution of Mechanical Engineers, Sir Kenneth Hague, Chairman of Babcock & Wilcox Limited, thought that most engineers of long experience would agree with him that this was not being done.

Research and development must of necessity have first call on scientific manpower. The importance therefore of the co-ordination of research effort must be obvious. This problem could well be the greatest single problem facing industry today.

Investigation of research must commence with that carried out by industry in individual companies. Frequently the research department was regarded as a luxury of little effect on the daily problem of selling the product, and the research department became frustrated and neglected. What the research department dealt with was of primary importance to the firm as a whole. Its work should have the necessary priority and should be of importance sufficient to justify such priority.

Next came research carried out by industrial research associations. These bodies were financed by an industry or a group of manufacturers having a common problem of research and by pooling resources could obtain the answer at a reduced cost. The efficient use of manpower could be severely limited by financial reasons as work was largely carried out on an annual budget, often without reference to problems arising in the course of the year. The research director in such an association would be in a different position to his colleague in a firm in that he had over him only a committee of men of differing interest. Also he had not the benefit of association with colleagues on production work who could advise and assist in his problems. A great deal of his time would be spent on liaison with manufacturers, Government bodies, and his own committee.

Research at the universities and other educational bodies also entered the picture and the relation between industry and the universities was improving rapidly. At the same time, it

must be recalled that the universities were there for education, and the problems they were adapted for were in the realms of "pure research" as distinct from application problems. The nationalised industries too had provided excellent research establishments in which work was carried out between the industrial research of the private company and the pure research of the universities. It was to be hoped that these organisations had established adequate liaison with both bodies.

The conservation of scientific and technical manpower in all these establishments depended on the correlation and mutual exchange of results between all these bodies. Unfortunately the dissemination of information by industry was not always possible in view of the manufacturer's interests. The days when the application for a patent was adequate protection were over in many cases today, and industry often preferred to rely on secrecy to protect its interests rather than to take a patent which would be seen and studied abroad by rivals whose acceptance of patent protection might be very different to British patent law. At the same time, much related knowledge could be made available to associated bodies.

The conservation of trained manpower was of such general interest to the engineering world that no apology need be given from a steam engineer for dealing with this subject.

A gloomy statistical summary

BY A CORRESPONDENT

HOPES for the future prosperity of our railways will not be inspired by Number 9 Transport Statistics, which shows a setback in freight train traffic for four weeks to September 10, with a fall in revenue of £1,828,000, or 9.5 per cent. A further drop of £1,533,000, or 7.3 per cent, is indicated for the next four weeks to October 8, bringing the total decline in freight train receipts for 40 weeks to £5,706,000, nearly 3 per cent. Though traffic management has been re-shaped to a large extent by delegating authority to local officers, with responsibility for traffic receipts and expenses, the downward trend persists.

In the ninth four-week period, the railways originated 16,562,000 tons of freight train traffic, a decrease of 1,595,000 tons, or 8.8 per cent. Merchandise was down 351,000 tons, 11.7 per cent, the Southern being the only Region to have an increase of 13,000 tons (5.4 per cent), while the London Midland and Western lost nearly 14 per cent of this high-class traffic and the North Eastern no less than 91,000 tons, a fifth of 1960 carryings. That Region suffers acutely from the fall in iron and steel production since April, which accounts for its mineral tonnage dropping by 250,000 tons (29 per cent) compared with the all-line fall of about 20 per cent. The North Eastern carried 184,000 more tons of coal and coke (7.5 per cent) against an all-line loss of 331,000 tons (3 per cent).

In the 12 weeks to September 10, wagon-loadings numbered 5,210,000, nearly 5 per cent below 1960. In part, the decrease resulted from an advance of 2.3 per cent in the average wagon-load at starting point to 10.06 tons. The merchandise load of 4.13 tons was 3 per cent heavier, though the London Midland put only 3.71 tons into 631,000 wagons, 30 per cent of total forwardings. Surely a poor use of wagons at a time when the number available for traffic was nearly one per cent less than a year ago!

In handling the diminished traffic, the railways worked 30,083,000 freight train-miles, a saving of 696,000, or 2.3 per cent. With an average train-load of 141 tons, the output of freight train operation was 1,145 net ton-miles per train-hr., while 1,303 ton-miles per shunting-hr. were recorded and 608 ton-miles per total traction-hr. in traffic. These general statistics were somewhat below the 1960 level and were eclipsed by the Eastern's output of 1,287 ton-miles per train-hr., with a train-load of 135 tons, 1,672 per shunting-hr. and 727 per total traction-hr. in traffic.

In the matter of freight train speed, Scotland led the way with over 12 m.p.h. for both steam locomotives and all types,

compared with all-line figures of 9.87 and 9.93 respectively. For diesel-hauled trains the North Eastern came first with a speed of 14.8 m.p.h. against 11.6 in Scotland, 10.6 in the London Midland—nearly a 50 per cent improvement on 1960—and a slowing-down to 9.5 in the Eastern and 8.8 in the Southern. Overall diesel freight train speed dropped by 8 per cent to 10.3 m.p.h. As might be expected from its long experience with electric traction, the Southern recorded a speed of over 13 m.p.h. for that motive power, an increase of 6 per cent, while the general average was 4 per cent better at 10.6 miles an hour.

Looking next at "freight train miles per total traction-hr. in traffic" there was a slight rise to the low average of 4.3, the Regional results varying from around 5 train miles in the hour in Scotland and the North Eastern to 3.7 in the Western and 3.6 in the Southern.

Wagon-miles tell the same story of better mobility on the eastern side of the country. Compared with the all-line record of 216 wagon miles in a train-hr., the Eastern worked 233 and the Western 199. Again in a total traction-hr. the all-line average number of wagon miles was 115, while the Eastern

raised its average to nearly 132, in contrast to decreases in the other Regions.

The condition of operating stock is deteriorating at an alarming rate. At September 10 a fifth of the locomotive stock of all types was under repair. The unserviceable locomotives included 2,584 steam, 99 diesel-mechanical and hydraulic, 343 diesel-electric, and 35 electric. Only 11,950 were available for traffic compared with 12,374 in 1960—a loss of 424.

Of a wagon stock of 958,455, about 7 per cent—67,920—were out of service, so that 8,400 fewer wagons were available for traffic than the railways had a year ago. Clearly the railways would have the utmost difficulty in coping with additional traffic in the event of a rise in industrial production. There is no prospect of an early traffic upsurge, but expenditure on what is termed "modernisation" will be wasted if the railways are short of essential equipment when demands for transport are intensified. Too much traffic has been lost to the railways already through lack of ordinary everyday facilities.

The tables showing the British Transport Commission's statistics for four weeks ended September 10 were published in our news pages on September 29.

LETTERS TO THE EDITOR

THE EDITOR IS NOT RESPONSIBLE FOR THE OPINIONS OF CORRESPONDENTS

RAILWAY FARES

September 19

SIR, Readers may be interested in the following table, currently used as an advertisement by the Austrian railways.

It shows the distance which may be travelled, second class single on express trains, in various European countries, for a sum of 50 Austrian Schillings, i.e. about 14s. in English currency.

Country	Distance in Km.	Country	Distance in Km.
Roumania	26	Belgium	109
Bulgaria	60	Denmark	112
Switzerland	70	France	114
Germany	75	Holland	141
Czechoslovakia	94	Austria	150
Hungary	95	Italy	180
Jugoslavia	100		

British Railways are not included, but at 2.75 pence per mile, the comparative figure is about 98 km.

Yours faithfully,

JOHN RODGERS

132, Worrin Road,
Shenfield, Essex

ROUGH RIDING ON THE KENT COAST LINE

October 13

SIR, Mr. H. F. Dalton is fully justified in his complaint about the rough riding he suffered on his journey from Broadstairs to Victoria. The riding qualities of the multiple units produced for Phase 1 of the Kent Coast electrification, and also the Hastings diesel-electric units, are simply appalling, and in this respect, these sets must be the worst new stock to be placed in service in this country, or even in Europe, for the last 40 years. They are certainly a disgrace to British Railways in 1961.

At any speed over 40 m.p.h. one is bounced up and down and jerked from side to side, accompanied by continuous thumping and clanking underneath the floor. Reading or writing is impossible, and eating and drinking in the buffet car is hazardous. I imagine that these buffet cars are the only ones in the world today which supply lids to the tea cups! A much better ride is given by the Commonwealth bogie fitted to the Phase 2 stock, but there has been no public announcement of anything being done about the Phase 1 units and the Hastings stock except that experiments are being carried out. It is intolerable that passengers should have to endure these wretched travelling conditions a day longer than necessary,

and the absence of news gives the impression that the problem is not being tackled with sufficient urgency. The Hastings stock has been in service for four years and the Phase 1 units for two years; if the combined engineering brains of British Railways cannot solve the problem in that time, surely we are not too proud to consult the Swiss or French railways, where smooth riding of a degree unknown in this country is experienced.

No doubt British Railways will give a number of reasons for the delay, but those of us who suffer this discomfort daily would appreciate results rather than explanations.

The present situation is all the more surprising in view of the fact that it has been widely known throughout British Railways for years that the B.R. standard bogie is not a success and does not give a really smooth ride, especially after a few months in service. How, then, could it be expected to give satisfaction under the more exacting conditions of multiple-unit working after its efficiency has been reduced by modification to cope with the restricted clearances on the Southern Region?

Yours faithfully,

M. I. MASON

9, Metropole Court,
Folkestone, Kent

[We think that when Mr. Mason has had some experience of the better riding achieved by the new B.R. B.4 bogie, which is the outcome of extensive work on the B.R. standard bogie and is at present in use on the "Bristolian," and later, when production is increased, will be extended to other trains, he will find that technical development on British Railways is not so backward as might appear from his unfortunate experience.—ED., R.G.]

RAILWAYS INTO ROADS

September 18

SIR, The activity to which Mr. Munns referred, on the Great Central Railway, is hardly apparent to anyone who cares to put in a little personal research, including a trip from London to Nottingham on the principal train of the day, as I myself recently did.

I spent about 40 min. in the station at Marylebone before my own train, the 8.40 a.m., left. During that time, which would be counted as "rush hour" the only activity I observed was one multi-unit diesel-commuter train arriving. My own

main-line train left with some 15 passengers aboard and I observed the same number leave the train at Nottingham, its terminus. The only increase was between Lutterworth and Leicester, where some shoppers got in.

Returning by road, in the evening, I watched another main-line steam train pull into Great Missenden Station. Two passengers got out leaving two in the train! At Brackley station, where I remarked to a railway official upon the presence of a diesel train in a siding, I was informed that there was no regular diesel service, but that as it was a "nice quiet stretch of line" it was used for crew-training.

Such goods traffic as I observed consisted mainly of trains of empty trucks, some almost literally proceeding at a snail's pace. I understood that these empties were sorted out in the marshalling yards at Woodford Halse. In these yards quite a lot of trucks were parked, but there was no observable activity over the 20 min., during working hours, that I was there. I was told that the main activity was at night.

Mr. W. D. Mitchell has pointed out that even if Mr. Munns' traffic figures were correct the whole of the day's traffic could be carried after conversion to a road, on a single track in 12 hours. This, of course, was a slip: it should have been 1 hr., or $\frac{1}{2}$ hr., assuming the traffic to be equal in both directions!

Are the three or four parallel main lines really so hard pressed that they could not accommodate this bit of traffic? It seems that the traffic on the Great Central remains only because the line is there: British Railways would be a great deal better off financially, without it, so would it not be sensible to use it for a pilot conversion project. Surely it would be wise, from the point of view of all employed on the railways, that this possible alternative, which might well be the means of preserving the railway network as a vital, though transformed, part of the country's traffic system, should be urgently investigated. If it is to be the iron wheel or nothing it looks as though within a very few years much of the system will be growing grass and those now employed on it looking for jobs elsewhere.

Yours faithfully,

M. J. DOUGLASS

Hallams Heath,
Shamley Green, Guildford

October 9

SIR, The following summary of trains leaving Cannon Street, Southern Region, during the peak hour 5.0 to 5.59 p.m., may interest some of your recent correspondents.

No of trains	Formation	No. of seats
		1st class 2nd class
2	" 4CEP/4BEP/4CEP " *	144 1,072
1	" 10 HAP " " "	92 630
2	" 6 HAP " " 4EPB " " "	114 1,582
1	12 car diesel-electric "	96 468
3	" 10 EPB " (950 seats) "	288 1,440
17	" 8 car " double deck " "	— 16,286
1		— 1,104
27	Totals	734 22,582

*Seats in buffet cars not included.

Yours faithfully,

G. T. MOODY

74, Claverdale Road,
Tulse Hill, S.W.2

"MODERNISATION" AT SHENFIELD

October 8

SIR, Some years ago, with much publicity, new destination indicators were installed at Shenfield. These never worked reliably, and eventually those on the platforms and in the subway were removed for repair, leaving one by the ticket office which has twice been serviced and failed again. British Railways can blame the contractor, but the fact remains that one of the busiest interchange junctions on the Great Eastern Line has had no effective train indicators for many months past. This is especially serious for three of the five platforms are signalled for "both ways" working; e.g., a train for

Liverpool Street may leave from platforms 1, 2, 4 or 5! Loud-speaker announcements made as a train arrives, often only on one platform, are no substitute.

Again, the ticket office area has been rebuilt, but nothing has been done about the subway where some of the tiling has bulged and fallen down. All this creates a very bad impression, as does the slow operation of the new A.E.G. multiprinter by certain booking clerks. Incidentally, why do the machines at Shenfield and at Chelmsford issue most tickets with stupid little return halves, whereas at Colchester the continental type of return ticket, the whole of which is retained by the passenger for the return journey, is very sensibly used, probably for the first time in Britain?

Yours faithfully,

JOHN RODGERS

132, Worrin Road,
Shenfield, Essex

DESIGNERS AND STYLISTS

October 23

SIR, In his letter of October 13, Mr. Bender would seem to have gained mistaken impressions both of the role of the industrial designer and of the B.T.C. Design Panel. As he points out, modern diesel and electric locomotives and rolling-stock are very complex structures, and it would be folly to imagine that any one man could be solely responsible for their conception and design. It is equally mistaken to imagine that all that is required is for the engineers concerned to "design from the inside outwards," and then call in an industrial designer to "round off the corners." This approach, especially when applied to passenger rolling-stock, can only lead to a solution which, at best, would represent a weak compromise.

It may be useful to consider here briefly the sort of person an industrial designer is. Broadly, he is a man trained with sound artistic principles and with an understanding of the engineer's approach to his problems. He must also be capable of clearly expressing his ideas in terms readily understood by both engineer and layman. In the case of some smaller products such as household items, he may be responsible for the entire design of a product in terms of its fitness of purpose, structure and appearance, and much excellent design is arrived at in this way.

For the design of larger products, where questions of creating a corporate image or of improving amenity frequently arise, his role must be that of one of a team. There is no scope for an industrial designer in the production of such a pure piece of engineering as the gas-turbine power unit, but apply that gas-turbine unit to a definite function, such as powering an aeroplane for passenger travel, and then a whole set of problems arises for which the engineers who have devised this remarkable power unit are not equipped. Similarly, why should a man who has spent his life studying the engineering design and construction of rolling-stock be expected to be an expert on the ideal ergonomic solutions to lighting, seating, and colour within his vehicles? Here lies the role of the industrial designer, acting as just one cog in the wheel of the complete design team which, under a central chief designer or design manager, co-ordinates the various specialists, and allows them to have their fair say in the overall planning of the job. Only in this way can the frequently conflicting requirements of the specialists—industrial designer included—be happily resolved. This avoids duplication of effort and the consequent time-wasting and expense, a state of affairs all too frequent in some quarters!

The contribution the industrial designer can make is obviously a specialised one. If he is not called on until the eleventh hour, his contribution will be slight and no real benefits will result. He will then be blamed for half-a-dozen aspects of the job over which he should have had some say, but did not. This leads to a tendency for him to be thought of as someone who merely comes along and "prettifies" the finished job, as indeed Mr. Bender implies. An additional cause of this unfortunate belief that he is a "stylist" is the "styling of

obsolescence" favoured by American-influenced automobile companies, which use deliberately "arty" styling as an aid to sales—this is *not* industrial design in the sense here discussed. In practice, a competent industrial designer may have to resort to removing, as tactfully as possible, exaggerated elements of style introduced by other specialists in a well-meant, but mistaken, impression that they are being "up-to-date." Contributions the industrial designer can make to a railway locomotive range from items such as the layout of driving controls, satisfactory seating and vision for the driver, and improvement of surfaces to facilitate cleaning and maintenance, to the overall external shape which, through careful detailing and due consideration to operational requirements, can be both pleasing in appearance and essentially fit for its purpose during the 30 or so years it must exist.

Yours faithfully,

BRIAN HARKSNAPE

6, Powls Square,
Brighton, Sussex

October 21

SIR, As an industrial designer engaged on railway projects I would like to comment on the points raised by Mr. Bender in his letter in your issue of October 13.

It is realised nowadays that it is not solely the design of the separate components that will make, say, a good car or a good locomotive, but the conception, co-ordination, and control of the design *as a whole*. Not so many years ago one man could supply this control, but today the problems are so complex, knowledge so specialised, and time so short that the overall design of a locomotive is usually in the hands of what is, in effect, a design team, comprising the manufacturer's chief designer, an industrial designer, and a British Railways representative.

The manufacturer's chief designer is more concerned with performance, construction, and cost (the mathematics of design), and the industrial designer is more concerned with the human element such as control, cleanliness, appearance, and prestige. The industrial designer is not concerned with styling

at all. Styling is the control of design by appearance for the purpose of creating obsolescence. He is concerned with appearance as one of the many factors of design, related to the design rather than controlling it. Appearance is nearly always important, but the degree varies with the product. It so happens that it was one of the factors most neglected just prior to the war, and thus given the most attention by industrial designers just after the war. Now that styling is a thing of the past, appearance is beginning to settle down to its true level of importance in the overall design. But as soon as one accepts the integration of appearance with design it has to be considered right from the start of the project.

To work with engineers, an industrial designer has to be a fairly competent engineer himself, but his greatest contribution is the ability to visualise the complete design, to balance conflicting factors, and to introduce experience gained from other spheres of design.

Unfortunately, it is true that consultant industrial designers have, on occasion, been credited with the design of a locomotive, although I am sure that they would never be responsible for such a ridiculous assumption themselves. My own firm has been subjected to such wishful thinking and quite without our knowledge until the statement appeared in print. The press is now learning to refer to the consultant designer as such, and not as "the designer." The reason for such errors is partly excused by lack of any official recognition of the designers from either the manufacturers or the B.T.C. In the absence of any such recognition the design of, say, a locomotive should be anonymous and credited to the manufacturer's design department, the firm of industrial designers, and the B.T.C. As it is, the design journals tend to name the industrial designers only and the railway journals tend to name the B.T.C. representatives only. The manufacturer's chief designer is seldom mentioned at all.

Yours faithfully,

E. G. M. WILKES

Wilkes & Ashmore
Industrial Designers, Horsham

PUBLICATIONS RECEIVED

Centre Couplers.—The large variety of automatic centre couplers made by Usines Emile Henricot S.A., of Court St. Etienne, Belgium, is of particular interest at the moment in view of the proposals for centre couplers for all Western European rolling stock now being examined by the U.I.C. and O.R.E. This builders' catalogue includes full details of transition types as well as normal models for European service, and also several versions of the Atlas coupler for use overseas.

Stichting Nederlands Spoorwegmuseum. Verslag over de Jaren 1957-1959 en over het jaar 1960. Founded in 1927 by private initiative, the Netherlands Railway Museum established in the old Maliebaan Station at Utrecht can pride itself of a record of (but for the war) continuous progress. The number of exhibits has steadily grown, and the number of visitors has risen from 3,400 in the first full year to over 60,000 in 1960, surely a symptom of continually growing interest in railway matters. The latest report, which combines a three-

year report for the period 1957-59 with an annual report for 1960, is in the form of a well appointed and finely illustrated volume of 60 pages, bringing details of new acquisitions, special events, distinguished visitors, and special activities associated with the museum. It is satisfactory to note that the visitors also included a number of organised parties from this country.

Tallylyn Railway Company calendar. The 1962 calendar of the Tallylyn Railway Company has been produced and may be obtained price 3s., post free, from the Publicity Director, Mr. R. K. Cope, at "Brynglas," Beckman Road, Pedmore, Stourbridge, Worcestershire.

Soldeo Blando. Solder users in all countries will be familiar with the book "Notes on Soldering" which is available to them on application to the Tin Research Institute in London, and its offices in other countries. A translation of this book into the Spanish language has now been made in the Departamento de Metales no Ferreos of the Consejo

Superior de Investigaciones Cientificas in Madrid. The book consists of 112 pages of text, including 47 illustrations and diagrams. It covers all aspects of soldering, including the theory and design of soldered joints, the basic steps in soldering, the wetting and penetrating action of solders upon metals, and the physical properties of all types of soft solders and soft soldered joints. There is a section on the soldering of stainless steel, aluminium, chromium, and other metals which require special treatment, and practical details of soldering techniques, used in a wide variety of industries, are also included. There is also a section on the making of soldered joints in lead pipes.

Winter Sports.—The 1961-62 winter sports holiday programme of Thos. Cook & Son Ltd., and Dean & Dawson, includes a wide range of resorts in Austria, France, Germany, Italy, Yugoslavia (the Italian Alps), Norway, Scotland (Carrbridge, Nethybridge, and Grantown-on-Spey), Spain (the Pyrenees) and Switzerland.

The Scrap Heap

Laying the last rail

The illustration shows the float entered in the recent Royal Show pageant at Nairobi by the East African Railways & Harbours. The scene on the float represented the laying of the last rail of the Uganda Railway at Kisumu on December 20, 1901.

Cloak and dagger man

Mr. Marples, Minister of Transport, commenting on the closure of the West-ham-Dunton Green line, said the responsibility for the decision was his alone. Wearing dark glasses so as not to be recognised, he had gone to the station himself to look around the area.

First railwayman in Canada

Sir William Van Horne is to be honoured by the National Historic Sites Division of the Department of Northern Affairs and National Resources, builder of the Canadian Pacific Railway's trans-continental line and later president of the railway. A plaque commemorating his achievements and contributions to Canada was unveiled at Windsor Station in Montreal on October 25, by Mrs. William Van Horne, widow of the grandson of the American-born railwayman. Officiating at the unveiling ceremony were Mr. N. R. Crump, Chairman and President of the Canadian Pacific Railway, the Hon. Walter Dinsdale, Minister of Northern Affairs and National Resources, Mrs. Van Horne, and the Hon. Pierre Sevigny. The plaque reads: "Sir William Van Horne, K.C.M.G. Dynamic and imaginative as General Manager, Vice-President, and then President of the C.P.R. during its formative years, he contributed much to its success and to the development of the country. Born Chelsea, Illinois, February 3, 1843; died Montreal, September 11, 1915."

Fishy business

An engine driver and a fireman recently pleaded guilty to two charges of stealing engine parts and a box of kippers, the property of the British Transport Commission.

Gentle progress

There are endless wrongs in our home railways to be put right, but there is every reason for believing that our directors and managers are as a whole alive to the necessity of reform, and while this reform may not be carried out to a blare of trum-



A float in the 1961 Royal Show at Nairobi representing the laying of the last rail of the Uganda Railway

pets, it is going on, though perhaps somewhat slowly, quietly and effectively, all the time. *From the "Financial Times," October 23, 1901.*

Leading the blind

On a poster in a Piccadilly Line carriage someone has scrawled in pencil besides a picture of a dachshund: *Deutschland uber alles*. Beneath this appeared an appeal in ink: "Stop writing on these advertisements you morans."

Off the rails

The New York Central Railway has completed the task of transferring the Chief Signal Engineer's office from Cleveland, Ohio, to New York, a distance of 400 miles. Road transport was used. *From "Parade."*

50 years ago

The stores which the modern locomotive consumes in coal, water and oil produces no better economical result comparatively than older engines. I am not saying this by any means for the purpose of disparaging the locomotive engine. It has been a wonderful and faithful servant; it transformed the face of the earth in the nineteenth century, and its presence has brought about a demand that will before many years are over

become a necessity for something more easily handled in stations and yards; something more facile; something always ready; a machine that will respond at a touch; a machine that will not require water or coal at the moment when it is most wanted; a machine that will not eat or drink when it is doing nothing in the shape of earning sovereigns. Some more perfect agency that will meet the conditions and congestions for which the invention of the steam locomotive is responsible. The near future may see electricity or some other power so developed and cheapened that from central stations it may be distributed over the railway lines, furnishing not only power for locomotive purposes and heat and light for stations and depots, but may at the same time in the best possible form meet the needs of communities and of manufacturers and industries right and left of those lines throughout the length and breadth of the land.

(Extract from Mr. S. Fay's presidential address to the Railway Students Union.) *From The Railway Gazette, November 3, 1911.*

Road to Hell

A landslide last week blocked the railway line between Trondheim and Hell, northern Norway.

OVERSEAS RAILWAY AFFAIRS

FROM OUR CORRESPONDENTS

RHODESIA

Ambulance trolley

Rhodesia Railways has built an ambulance trolley with an all-steel body on a Wickham flying gang-trolley chassis. The trolley is stationed at Delt, a railway township 45 miles from the nearest hospital. Motive power is supplied by a 24-h.p. V-8 engine which gives a top speed of 55 m.p.h. A transfer box allows the trolley to be driven in each direction.

INDIA

World Bank loan

The World Bank has granted a U.S. \$50-million loan for the development of India's railways. It will help meet the cost of equipment and material that will be imported in the coming year. The loan, for a term of 20 years, bears $5\frac{1}{2}$ per cent interest including 1 per cent commission which is allocated to the Bank's special reserve. Repayment of the loan will start in February, 1965. Five U.S. commercial banks are taking part in the loan without the World Bank's guarantee.

CEYLON

Purchase of diesel locomotives

Two diesel locomotives, bought by the Ceylon Government with funds realised from the sale of Canadian wheat flour donated under the Colombo Plan, were named after Montreal and Vancouver at a ceremony at the Colombo Fort Railway Station on September 29. The two locomotives, each costing Rs.850,000, will be used on long-distance routes. The Canadian Government had earlier donated 10 diesel locomotives to the Ceylon Government Railway at a cost of Rs. 8½ million. They were named after ten Canadian Provinces.

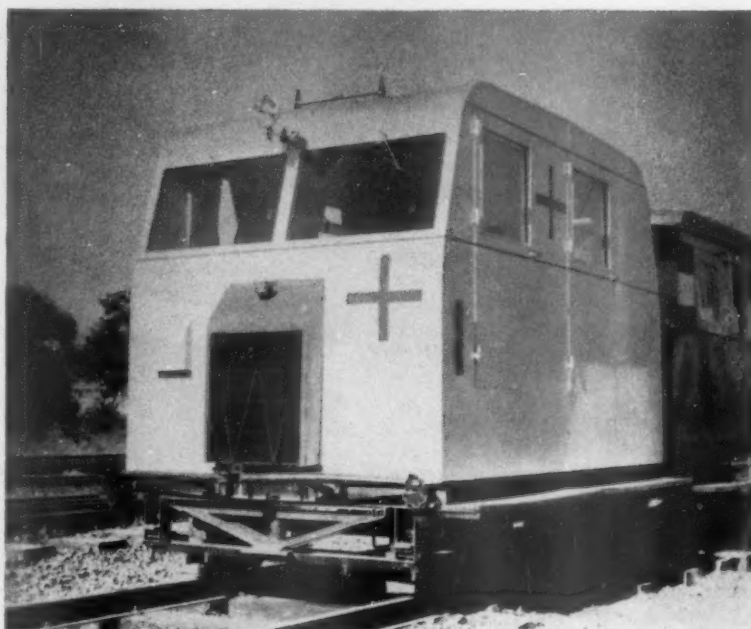
Colour-light signalling

The Ceylon Government Railway is introducing automatic colour-light signals to replace the present outmoded type. The first stage of the project should be completed by the end of this month.

JAPAN

Six-coach electric sets

Japanese National Railways has designed for its 3-ft. 6-in. gauge lines what are termed "De Luxe Romance Cars."



Ambulance trolley built by Rhodesia Railways

These are all-electric sets operating on a 1,500-V. d.c. system. Each set has six coaches with a total capacity of 316 passengers, and is designed to operate at speeds up to 100 m.p.h. For the 4-ft. 8½-in. gauge lines, a six-coach set consisting of four motor-coaches and two trailers has been evolved.

PARAGUAY

Sale of railway

Agreement has been reached about the sale of the British-owned Paraguayan Central Railway. The final terms are that the Paraguayan Government will pay to the London owners £200,000; payments to be made in equal half-yearly instalments over a period of 20 years without interest.

CHILE

Orders for diesel locomotives

The Chilean State Railways has awarded contracts for the supply of 64 diesel locomotives (of 113 to be ordered) to United States companies. These orders, valued at \$12.9 million, together with \$1.5 million of track maintenance equipment, \$0.4 million of rails, and

\$5.6 million of other railway equipment to be purchased in the United States, will be financed with the aid of a \$20-million Eximbank loan.

FINLAND

Locomotive orders

Finnish State Railways has placed an order for six shunting locomotives with domestic manufacturers. Orders for 10 main-line diesel locomotives and 20 shunting locomotives are expected to be placed shortly.

NETHERLANDS

Four-coach electric sets

Netherlands Railways has been testing a lightweight passenger train unit, the first series of which, comprising 10 four-coach electric sets, will be brought into service at the end of 1963. Present rolling-stock weighs 206 tons for a 236-seater; the new stock will weigh 163 tons for a 281-seater. Each train will have eight traction motors, mounted in the bogies of the centre two carriages, the combined rating of these will be 1,900 h.p.

MOROCCAN RAILWAYS modernisation

MOROCCO's first railways were built by the French after 1920 when the largest part of the country had become a French Protectorate. The first trains—on standard-gauge lines—linked the city of Marrakesh in the south with the expanding port of Casablanca and on to Petitjean in the north where they joined up with the Tangier-Fez railway.

Railway monopoly

This last company, which was owned by the International Administration of Tangier, had the monopoly of the railway from Tangier on the Straits of Gibraltar to Fez, then Morocco's largest city in the north, passing through Petitjean. There was also a third railway company—the Chemin de Fer du Maroc Oriental—linking Casablanca with Oujda and on into Algeria. This was French-owned. Quite independent of these companies were several small narrow-gauge railways linking a few of the towns in the Spanish Protectorate with the Spanish enclave port of Ceuta opposite Gibraltar. Since 1956 these railways have ceased to function.

The three main railway companies were nationalised when Morocco became independent in 1956. At that time the Spanish and French Protectorates, followed a few months later by the International Zone of Tangier, were integrated into the Kingdom of Morocco. The railways are now called the Chemins de Fer du Maroc—C.F.M.

Modernisation of rolling-stock

Today Morocco has 1,756 km. of single-track, normal-gauge railways. Of these 690 km. are electrified; diesel-electric trains are used on the rest. During

1960-61 the Moroccan railways has undertaken the modernising of rolling-stock both for mineral and passenger transport. Morocco is one of the world's largest producers of phosphates—much of it exported to Great Britain. Not only have the lines between the mines of Khouribga and Casablanca as well as Kachkat and the port of Safi been improved, but new rolling-stock has been ordered.

Before long 150 aluminium covered

trucks—of new design—on three bogies each will be delivered by the Moroccan company which is making them. Another 150 have been ordered. These trucks have the following characteristics; tare 10 tons, load 50 tons and total weight loaded 60 tons. These 4,000-ton trains will be capable of transporting approximately 3,300 tons of phosphates. This will increase the amount of mineral transported while at the same time reducing operating costs. Each truck costs 6 million Moroccan francs (£1 = 1,400M.Fr.). Although the transport of phosphates accounted for most freight, the railways also transported iron ore and lead as well as petrol to and from the refineries.

Training Moroccans

Passenger-km. transport increased by 3.3 per cent over the previous year, but freight and baggage decreased. However, receipts totalled 11,120,398,748M.Fr. (about £8 million) which was an increase of 5.54 per cent. Expenses came to 11,811,012,339M.Fr. which was an increase of 6.7 per cent over 1959. This was mainly because of increased salaries and personnel. The C.F.M. is training young Moroccans to take over

Development includes training of Moroccan staff and building of large quantities of rolling-stock



A new diesel-electric train in Tangier Station



The railway station near the port of Tangier

the jobs still held by Frenchmen. In 1960 some 700 Moroccans began training but it will still take three years before they can fill all the French-held jobs—especially now that the new diesel-electric trains need specialised personnel.

Increase in passengers

The number of passengers has increased each year. In 1960 there were 3,847,362. This was an increase of 22,607 passengers over 1959. Of every 1,000 people carried, 30 travelled first class (whereas only 25 in 1959); 183 went second class (187 in 1959); and 787 went class E, which was one passenger less than the preceding year.

Since the beginning of this year a total of 28 new locomotives has been put into service on the Moroccan railways. Of these eight are diesel-electric locomotives imported from Alstom of France. These locomotives have the following character-

istics: length 18 metres, width 2.9 metres. One engine, a Type MG-O, developing 1,100-h.p. supplies the power. The second engine is a Poyaud which can develop 1,160 h.p. Total weight is less than 6 tons.

These diesels use 270 litres of gas oil per 100 km. They have continuous electric transmission and can achieve speeds of 120 to 140 k.p.h. In the coaches seats are grouped in pairs each side of the gangway. Fittings are of aluminium, the walls are covered with a light-coloured wood and the adjustable seats covered with the same colour of plastic imitation leather, with white nylon head rests. The *voiture couchettes* have ten compartments.

Casablanca-Tangier service

These new trains have been put in service within the last five months on the Marrakesh-Casablanca-Tangier runs. The Casablanca-Tangier train leaves the har-

bour station at 8 a.m. each morning and, after numerous stops, reaches Tangier at 1.50 p.m. After a few minutes in Tangier Station it continues into the port and stops alongside the Spanish ferry boat.

Passengers doing the 48-hr. Casablanca-Paris journey then cross the Straits by ferry to continue their trip by Spanish and French trains.

Obligatory seat reservation

This diesel-electric train has five coaches: first and second class, and a buffet bar. It is air-conditioned with large windows and adjustable and reversible seats, the ticket costs £2 7s. This includes seat reservation which is obligatory even though there are few passengers, and baggage registration. Only small parcels can be taken in the carriage.

Tangier is also linked with the rest of Morocco by one other daily train.

ELECTRONIC COMPUTER CENTRE Schenectady, U.S.A.

ALCO Products Inc., formerly the American Locomotive Company, has established an electronic computer centre at its Schenectady, U.S.A., headquarters.

Among the company's data-processing and computing equipment are an I.B.M. RAMAC 305 computer; an I.B.M. 650 magnetic-drum, data-processing machine, and a Berkeley-Beckman EASE analog computer.

Wide variety of uses

The RAMAC 305 (RAMAC stands for "random access method of accounting and control") is designed to process renewal parts orders and to keep up-to-date inventory of 15,000 different locomotive spare parts. Alco uses the 650 computer in a number of ways, which include comprehensive motive-power studies for the world's railroads, locomotive and engine design calculations, and computations necessary for the engineering work that goes into the design and construction of nuclear power plants. The analog computer is employed in a wide variety of engineering studies where its capacity to shorten time required for the solution of high order differential equations is particularly valuable.

The RAMAC 305 computer, in the renewal parts control area at Schenectady, is linked with the three warehouses by Teletype printer and tape connection over lines leased from the American Telephone & Telegraph Company.

The RAMAC 305 can store up to

American company's installation to facilitate delivery of its products



Tape-to-card machine used to transfer order-information received by teletype from warehouse to cards to be fed into RAMAC computer (centre background)

5,000,000 electrical impulses of information on 50 "memory" discs. It knows just how many parts of every kind are in each warehouse, even to the specific bins in which they are located.

Method of ordering

An order received at one of the warehouses is transmitted over teletype to the control facility at Schenectady. The information is then fed into the computer,

which produces a punched tape that is relayed back to the warehouse to direct the shipment of the necessary part.

At the same time the computer performs two other vital functions which normally would be slower in manual order-processing. It produces the invoices and other papers needed and it continually adjusts its inventory to account for each part shipped.

STAFFORD-CREWE RESIGNALLING in the London Midland Region

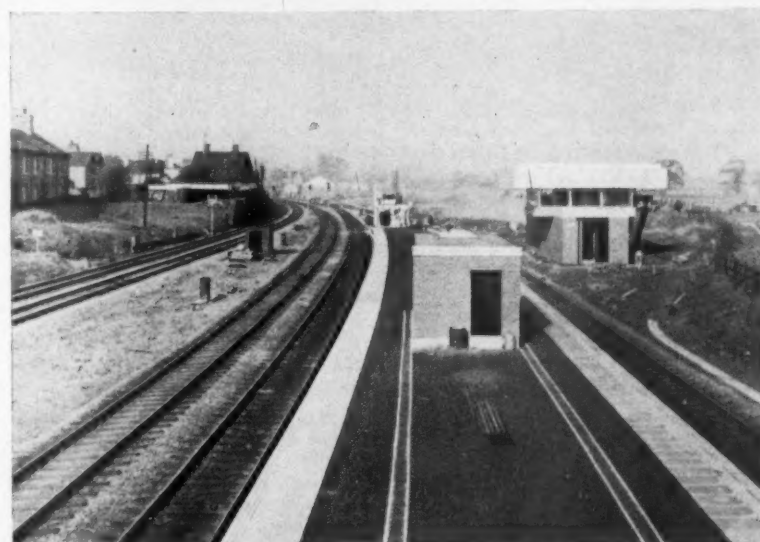
ON October 8, 1961, the second and larger part of the Stafford-Crewe resignalling scheme came into operation. The first part between Crewe and Whitmore has been in use since July 9, 1961. This means that over 60 miles of very busy main line between Stafford and Liverpool there is now complete colour-light signalling and continuous track circuiting—without a single semaphore signal. Add to this the previous resignalling of the Crewe-Manchester line, and this area now comprises 100 route-miles of colour-light signals and continuous track-circuiting.

Four intermediate signalboxes

Over the 25 miles from Stafford to Crewe there are now only four intermediate signalboxes. In some ways the most interesting of these is the one at Norton Bridge, five miles north of Stafford, where the line to Stoke-on-Trent leaves the main line in a north-east direction and joins the Colwich-Stoke line at Stone Junction.

Now between Stafford and Crewe the arrangement of the main lines, reading from West to East, is Down slow, Up slow, Down fast, Up fast. At Stafford the lines from the important industrial areas of Birmingham and Wolverhampton join the main lines from Nuneaton and Rugby on the slow line (West) side but the Stoke line goes off at Norton Bridge on the fast line (East) side.

The result is that trains between the Birmingham area and Stoke-on-Trent which normally use the Down-slow line

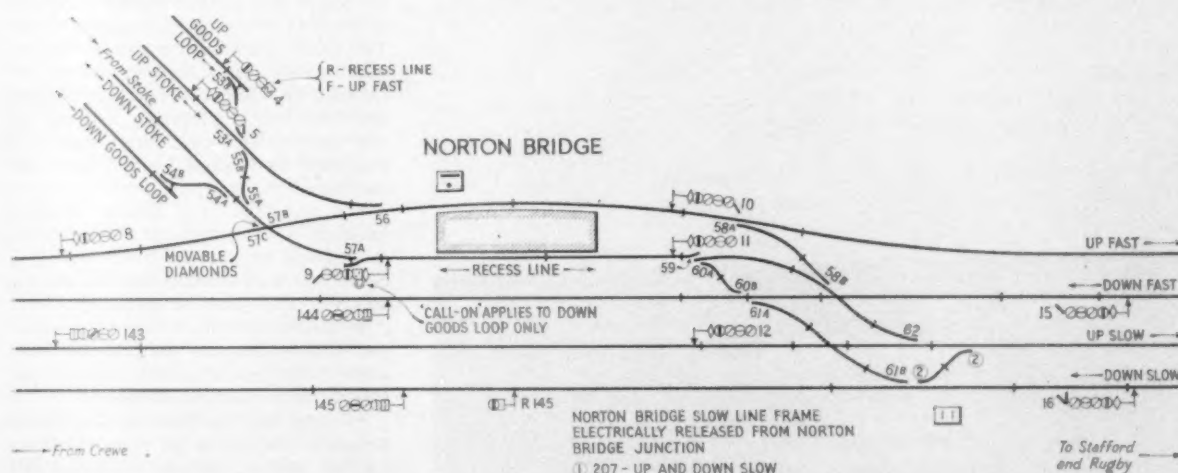


General view of power signalbox and island platform

between Stafford and Norton Bridge, have to cross both fast lines to get on to the line to Stoke. Until the recent track remodelling, the connections at Norton Bridge consisted of a double junction between the fast and slow lines, followed immediately by the double line junction off the fast lines to the branch.

That meant that trains from the slow

line to the branch and in the opposite direction had to wait for simultaneous margins on both Up and Down fast lines. These are very busy lines, and the task of obtaining these margins under present traffic conditions without delaying main-line trains was difficult enough but with the improved services under electrification it would have been quite impossible.



Signalbox diagram at Norton Bridge showing lay-out of lines controlled

To meet the more onerous traffic requirements under electrification and maintain the present maximum speeds of 90 m.p.h. the complete remodelling of the junction and resiting of the branch platform was necessary.

Therefore, as the diagram shows, the Up fast line has been slewed to the east and realigned to accommodate the new branch platform. The original Up fast line has been turned into a "recess" line, for branch trains, signalled for both-way working and trapped at each end to protect the Up and Down fast lines. The diagram shows only this section of the area controlled by Norton Bridge.

Crossing the fast line

With this layout, trains for Stoke coming off the Down slow cross the fast lines in two stages; first from Down fast to recess line to carry out station duties and then across the Up fast to the Down branch as soon as a suitable margin offers. The same can happen in the Up direction. Thus under these new conditions only one "margin" at a time is necessary, which greatly facilitates working.

Incidentally, the island platform which comprises Norton Bridge Station in its new form, serves this recess road (and also the Up fast in case of need). All trains to Stoke have to use the recess road, but trains from Stoke can alternatively use the Up fast, crossing to the Up slow at the Stafford end of the station.

The power signalbox at Norton Bridge houses a modern relay interlocking and a route-setting push-button panel, of a type similar to those recently installed at Edge Hill and Weaver Junction. This installation replaces six former signalboxes and controls 14 miles of the main line.

As at Edge Hill, miniaturisation has been the rule, for both the panel and the

relay room. The panel is necessarily longer than that at Edge Hill, for the simple reason that it covers a much greater length of line. Indeed, the track-circuit indications on the panel extend to Madely on the one side and Stafford No. 5 on the other, most of the signals being automatic with signal-post telephones communicating with Norton Bridge signalbox.

Most of the points controlled from Norton Bridge are operated by electro-pneumatic point machines, but there is one exception. At Great Bridgeford 2½ miles to the south there is a running junction from Up slow to Up fast, which is controlled from Norton Bridge. Here it was more economical to use electric point machines.

Except in the vicinity of Norton Bridge and Great Bridgeford, all signals work automatically. It is also possible to make the North Bridge controlled signals work automatically as required for straight up and down working. For this purpose an additional "A" button is provided on the panel at controlled signals required to work automatically.

Initiation of automatic working

When the normal pushbuttons are used, for both "entrance" and "exit" purposes, the "stick" control is operative and these buttons are operated for each train. But if the signalman wishes to initiate automatic working for a sequence of through trains he can do so by pressing the "A" entrance button, then the exit button. By this means the "stick" feature is made inoperative, the signal clearing as soon as the train has passed the overlap beyond the signal ahead.

To revert to the normal (or "stick") method of control, all the Signalman has to do is to push the normal button at the entrance end, followed by the appropriate

exit button. In case of emergency a signal can be restored to danger by pulling whatever button is in use at the time, whether normal or automatic.

Badnall Wharf sidings signalbox 2½ miles to the north of Norton Bridge has been reduced in status to a shunting frame. It will continue to work the local point connections as required.

The signals protecting these connections are slotted by Badnall Wharf levers and provided with the necessary approach locking. There is an illuminated diagram, which shows if any trains are approaching.

Control of other connections

Other siding connections and emergency crossovers at Whitmore, Standon Bridge, and Norton Bridge are controlled by local ground frames. These are released by switches on the Norton Bridge panel.

As adjuncts to the Norton Bridge panel there are the usual signal-post telephones, and signal-lamp failure and power-supply indicators. Block working on the main lines has been replaced by train describers. The train code number is displayed on the panel near the signal it is approaching and is automatically stepped forward from signal to signal across the panel as each train passes through the section until it is automatically transmitted to the next box. The Norton Bridge signalman is able to interpose or cancel descriptions.

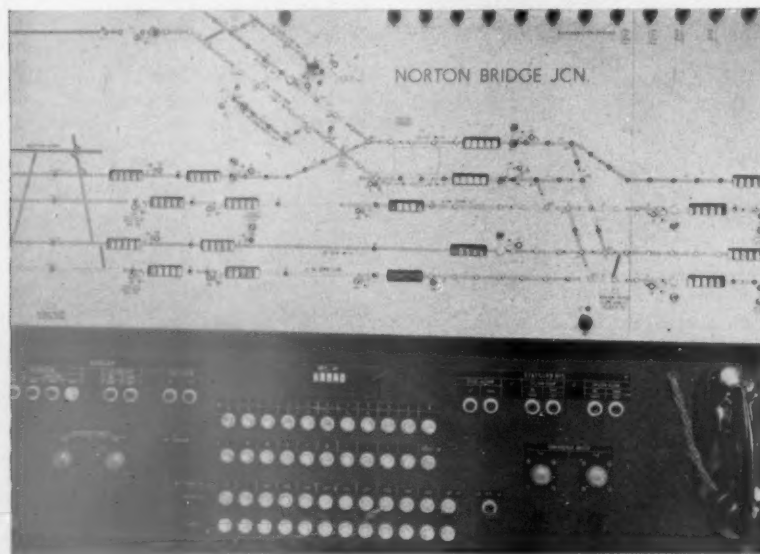
For the time being, block working to Swynnerton Junction is retained, the "luminous" type block instrument being incorporated in the Norton Bridge panel. On the desk behind the panel there is a small "double-faced" telephone concentrator, arranged so that it can be used by signalman or booking lad.

There is also a staff-location panel, with two groups of four call buttons, one for the section north of the box and the other for the south. These buttons are linked with lineside speakers capable of emitting four distinctive calling notes. The fourth button is for the cancel call, which as the name suggests is used for cancelling a wrong call, and also to mark the conclusion of a message. On hearing the appropriate call, line staff are instructed to proceed to, and use, the nearest telephone.

The signalbox is a roomy, modern building. It has a flat roof which extends several feet beyond the front and sides of the box with overhanging brackets on which a sun visor is mounted.

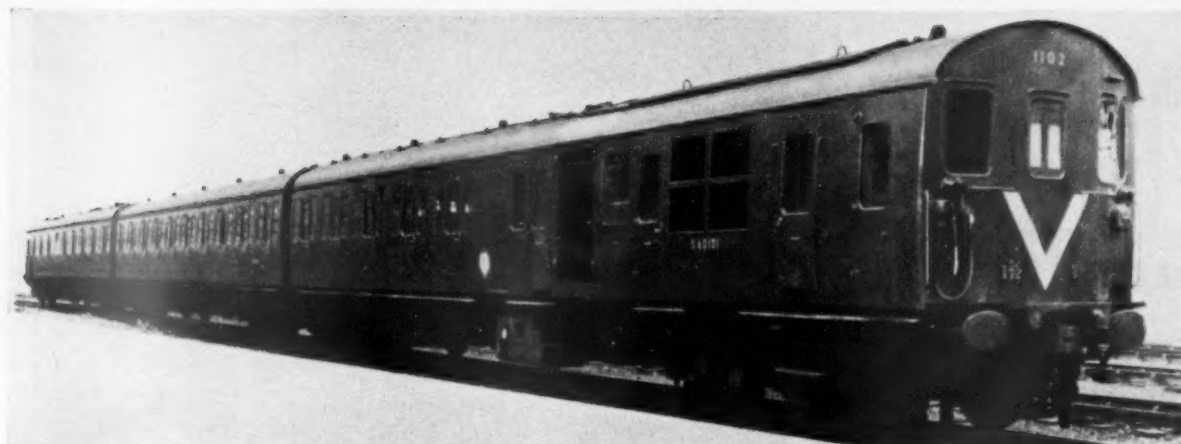
In contrast with the Crewe-Manchester and Crewe-Liverpool sections the main cable route for the greater part of the Crewe-Stafford section is buried.

All signalling and telecommunications apparatus and cables are protected from traction effects, similar immunisation precautions being taken against the



Close up of control panel with train-description set-up keys

Continued on page 512



View of diesel-electric multiple-unit train on British Railways Southern Region

CYLINDRICAL ROLLER-BEARING AXLEBOXES in diesel trains

A CONSIDERABLE increase has been made during the last few years in the application of cylindrical roller-bearings for axleboxes of motive power and rolling-stock, largely because of the advantages this type has in regard to convenience of assembly and dismantling, for the inner races can be mounted independently of the outer races, and can also be withdrawn separately. The principle of separate absorption of radial loads and axial loads is realised in cylindrical roller-bearings. Also axial play in such bearings can be determined independently of the radial play. All axial-loads can be absorbed by the lips and there is wide choice of axial play.

Trials with FAG bearings

Trials of this type of bearing, of FAG manufacture, on a diesel train of the Southern Region of British Railways are thus understandable, particularly as a simplification was possible compared with the U.I.C. standard wagon bearing of code 514, table III, by omitting the end cap, a modification which has enhanced the ease of assembly and dismantling.

For these tests a 500-b.h.p. Hampshire diesel set was chosen. Much of its running is over secondary lines with numerous curves; but a top speed of 75 m.p.h. also is a characteristic, and at this speed the axleboxes are comparatively highly stressed, so that an examination of the bearings after 100,000 miles should furnish some proof of their functional efficiency or otherwise. A plan of the twin-car set and details of the journal loadings are given in Fig. 1. Wheel diameter of the railcar is 40 in.,

Trials conducted with a 500-b.h.p. diesel set in the Southern Region of British Railways

and of the control trailer 42 in. The whole train unit, including a centre trailer which did not have test bearings fitted, and so is not shown in Fig. 1, is illustrated on this page.

Outer axle cap omitted

The design of the roller-bearing axleboxes is shown in Fig. 2, and a side view of a box in position is given in the accompanying half-tone illustration. The axial forces are effective from the bogie to the axlebox in such a way that a lip to absorb these forces is required only on the inner race facing the wheel-centre disc. It was therefore possible to omit the outer axle cap. Apart from the advantages of the cylindrical roller-bearing enumerated above, it was thus possible in this case to make the axlebox

cheaper and, at the same time, simplify both mounting and dismantling still further.

Axial play in the axlebox mounting is in this case measured as the sliding movement which the bogie can carry out against the wheel set in the axial direction (Fig. 3). The designed axial play was 0.065 in. or 1.6 mm. This value compared approximately with the axial play of the U.I.C. standard cylindrical roller-bearing axlebox already referred to.

Examination after 85,000 miles

On the two end cars of the train 16 roller-bearing axleboxes to the design shown in Fig. 2 were mounted on May 9, 1960. The intention had been to examine them after 100,000 miles of service, but the flange wear of the leading wheel

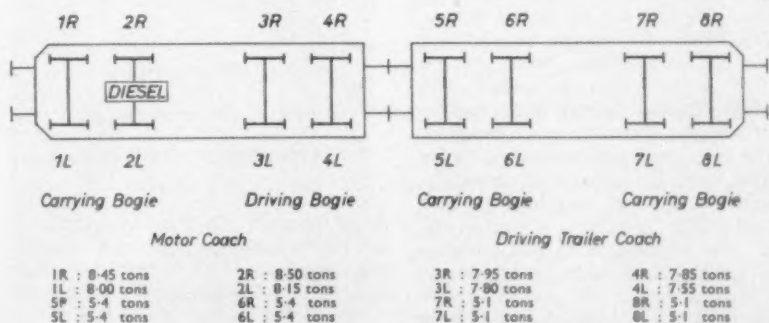


Fig. 1.—Plan of diesel-electric twin-car group showing wheel loading

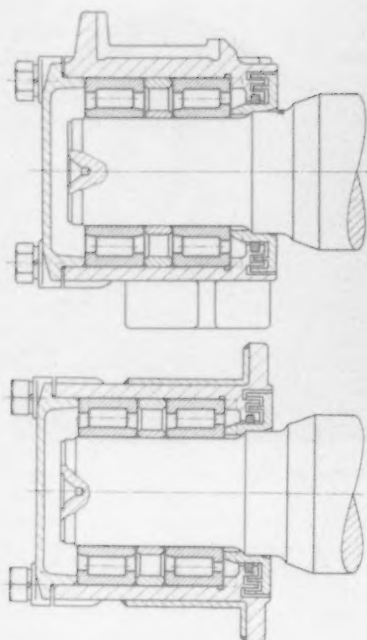


Fig. 2.—The test bearing

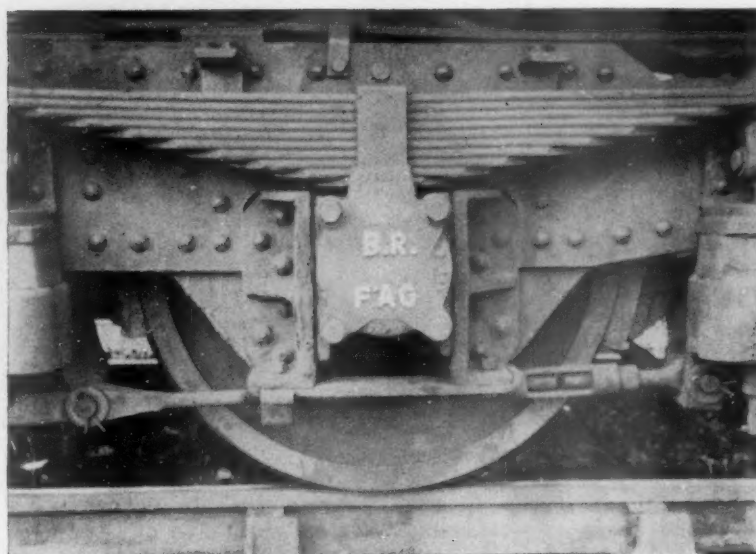
set was so severe after about 85,000 miles (135,000 km.) that it had to be corrected after some 10 months' service, and the axleboxes were examined at the same time for convenience. Excessive wear of the wheel flanges is characteristic of the high guiding forces to which the wheel sets, and consequently the axleboxes, subjected.

Races and rollers satisfactory

On inspection of the cylindrical roller-bearings it was found that the roller paths of the inner races, and the rollers themselves, were in a satisfactory condition. It was difficult to detect from the appearance of the roller paths of the inner races that the bearings had been in service. This means that the bearings were satisfactorily lubricated during their whole period of running, and that the axle grease used was the correct choice.

The lips and roller faces of the bogie bearings showed practically no effects of axial-load arising from wheel-flange forces. On the driving bogies minute marks from wheel-flange axial-loading were indicated. These were of no greater severity than is normal with bearings subjected to high thrust loads—their condition, therefore, was as expected.

The inner races had not moved on the journal, either circumferentially or axially, despite the fact that they had not been locked axially by either a nut or an end cap. The interference fit had therefore been sufficient to hold the inner races on the journal against the prevailing conditions. After withdrawal of the inner races it could be seen that the surfaces of both the journals and the bores were



The bogie with the test bearings

in excellent condition, and there was no evidence of fretting corrosion.

The lubricating conditions of the cylindrical roller-bearings were satisfactory. The labyrinth seals and the felt strips had sealed the bearing enclosure effectively. Nothing out of the ordinary was found with the axle housings themselves.

After the inspection, the axleboxes were remounted and put into service again in the same coach unit; on remounting, the outer races of the cylindrical roller-bearings were, as usual, rotated through one-third of the circumference.

This precaution is usually taken in order gradually to use the roller paths of the stationary races for distributing the loading over the whole circumference.

For the inspection, the inner races of the cylindrical roller-bearings were simply dismantled with an induction heating device, designed for 440-V. 50-cycle mains supply at the works. With this device the inner races were also heated for mounting in addition to being demagnetised.

The *Eisenbahn Technische Rundschau* is to publish a German version of this article in its November issue.

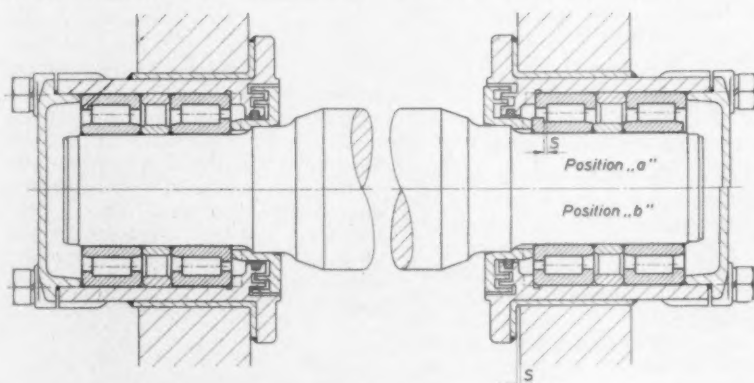


Fig. 3.—Schematic view of the total axial play within the test axleboxes

Stafford-Crewe resignalling

(Concluded from page 510)

25-kV. 50-cycle a.c. traction current as in the Crewe-Liverpool and Crewe-Manchester sections where the new signalling has been in use for some time.

The work was planned and carried out under the direction of Mr. E. G. Brentnall, Chief Signal & Telecommuni-

cations Engineer, London Midland Region, British Railways, to the requirements of the Operating Superintendent.

Principal contractors were as follow:—

Power signalling, including the panel, signals, E.P. point equipment, track circuits, etc.
Train describers, signalpost telephones.
Telecommunications cables and associated earthing system

Westinghouse Brake & Signal Co. Ltd.
Standard Telephones & Cables Limited
British Insulated Callender's Cables Limited

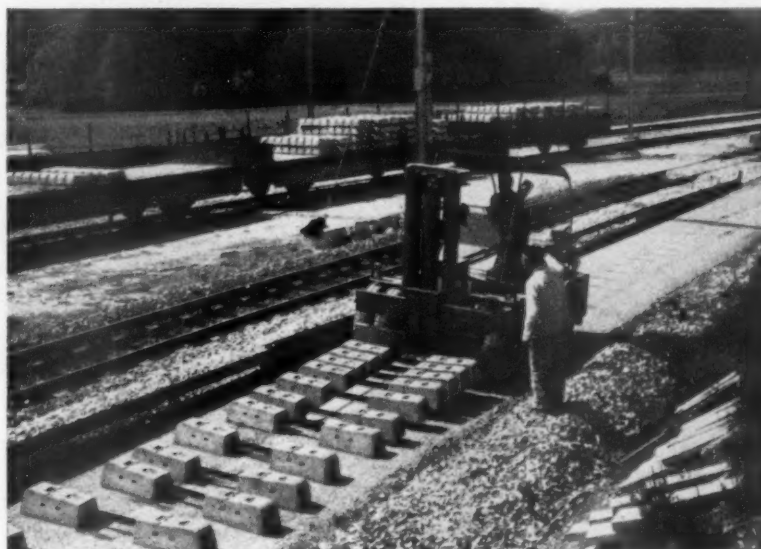
COMPACTED ASPHALTED BALLAST on the Rhaetian Railways

TO MEET the ever-increasing demand for travelling speed and comfort, and in the endeavour to reduce track maintenance charges, the railway engineer is constantly in search of improved forms of truly permanent way. Much has been done toward this end by introducing measured-shovel packing, long-welded rails, resilient soleplates, concrete sleepers, and elastic fastenings. The labour force has been reduced but maintenance has been improved by means of many excellent machines. Nevertheless, the best of tracks are not yet "permanent" ways. In some cases this may result from unstable formation or even mining subsidences, but measures are taken to combat these disabilities. There remains the track itself. Given a solid underlying formation, its permanency is questionable even with all the most modern aids.

Reason for present method

It is likely that the original adoption of the traditional method of ballasting the track was mainly because of difficulties experienced in the early days of the railways in obtaining an exact rail level adjustment by any other means.

A real "permanent way" is by no means unknown in railway engineering, but hitherto such construction has been almost exclusively on special types of track such as underground or tramway lines, on bridges, in locomotive sheds, at washing plants, or on turntables. Paradoxically, the running speed in such cases is so low that there is much less need for



Distributing R. S. sleepers, promoted by Société d'Etudes Ferroviaires (STEDEF), on asphalted ballast

a firm foundation than on the open line.

Consideration has been given to the use of bitumen products either for the solidification of a conventional ballast bed through spraying, or for the preparation of a solid base of rolled and

asphalted gravel as a support for block-concrete sleepers. An interesting example of the latter method has just been provided in Switzerland where the second track of the metre-gauge Rhaetian Railway line from Chur to Reichenau has been built in this way.

Stable track bed

Two 4-in. layers of rolled asphalted broken gravel were in turn spread and rolled, and on them were laid R.S.-type block-concrete sleepers carrying continuous-welded rails. Levelling was done by packing with a mixture of fine gravel and asphalt. Only for boxing was ordinary ballast used. Therefore no unit gravel upon which any loading is imposed changed its position, and no change of level or lateral position of the rails is possible, provided that the subsoil does not give way. It is considered unlikely that any maintenance will be necessary on the new track for many years to come. The first cost of this track is stated to be little greater than that of conventional track.

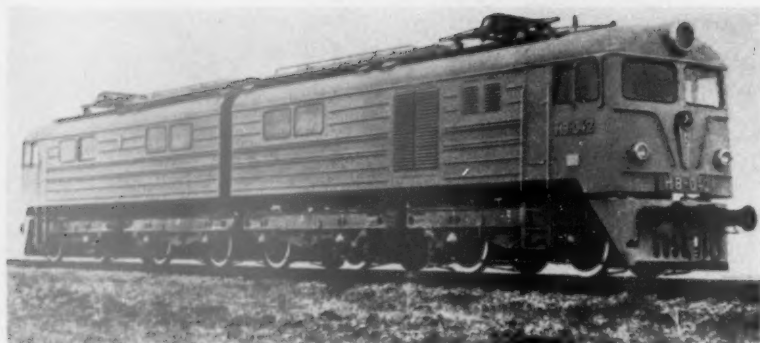
The Rhaetian Railways also intends to use a permanent construction for the track on a reinforced-concrete bridge with extremely limited construction height.



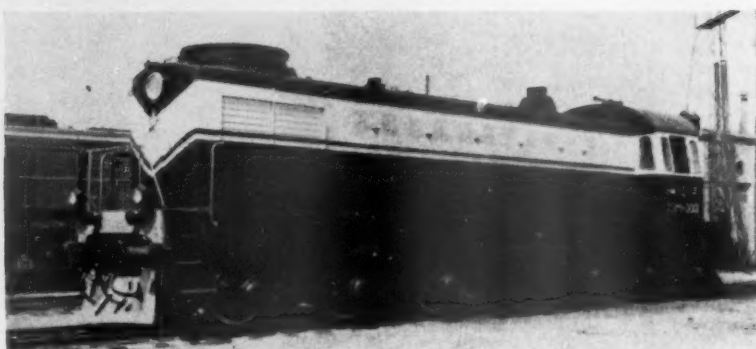
Levelling and fixing R. S. sleepers



Track on Chur-Reichenau section



*N-8 eight-axle
electric locomotive*



*TEM-1 diesel
shunting locomotive*



*Control panel installed for
"automatic driver"*

DEVELOPMENTS IN THE U.S.S.R.

A system of automation in which the braking process is made to depend on the speed, weight and running properties of the wagon, as well as on the degree to which the hump yard is occupied, has been devised and is undergoing testing. The system of automatic braking is linked with the type of wagon-braking device on the hump. The new designs of weight-type braking arrangements created in the recent years have shown good results. Where the signals are badly placed, use is made of automatic locomotive signalling of the point type with automatic stop. Based on the principle of the interaction of two resonance circuits located on the line and in the locomotive, this system makes it possible to transmit to the locomotive three signals co-ordinated with the input and through signals.

All major shunting yards in the U.S.S.R. engaged in the marshalling of trains are provided with mechanised humps with electric switch centralisation and electro-pneumatic braking devices.



*Terminal station of Novosibirsk
in Central Siberia*

PERSONAL

United Kingdom Railway Advisory Service

BRIGADIER A. E. M. WALTER, C.B.E., M. INST. T. Head of the International Inland Transport Branch of the Ministry of Transport, who has been appointed the first Chairman of the United Kingdom Railway Advisory Service, has been Temporary Chairman of the organisation since its formation in 1959. He was Controller-General of the Inland Water Transport Branch, Control Commission for Germany, until 1946, when he was appointed an Inspecting Officer of Railways, Ministry of Transport. After only a few months he started the International Inland Transport Branch. During the early stages of the war he was Deputy Assistant Director of



Brigadier A. E. M. Walter

Transportation in the United Kingdom and in the Middle East. Later he was transferred to the British Army staff in Washington responsible for the design and provision of transportation stores obtained under lend-lease and for their export to operational theatres. After service as Director of Transportation in South East Asia Command, he returned to Europe as Director of Ports & Inland Water Transport, 21 Army Group, and was commander of the port construction force which built the artificial port of Mulberry B. Before the war Brigadier Walter had considerable experience in all branches of electrical, mechanical, and railway engineering.

British Transport Commission

MR. J. O'NEILL, Chief Paper & Printing Officer, British Transport Commission, who, as recorded in our October 27 issue, is to vacate the position in December before formally retiring in March, 1962, entered



Mr. J. O'Neill

the service of the London Midland & Scottish Railway in 1928, when he was invited by the late Lord Stamp to participate in a survey of the company's methods and procedure. The outcome was the establishment at Euston and Crewe of the Executive Research Office. In 1936 Mr. O'Neill assumed sole charge of the Executive Research Office, a position which he retained concurrently with his appointment as Advertising & Publicity Officer. In 1938, with Mr. G. S. Hussey, he designed and patented the wagon label clip. He was appointed to act as Advertising & Publicity Officer in 1944. In 1949 he formed the Railway Executive Paper & Printing Department. This resulted in the closing of the offices at Paddington, Kings Cross, and Nine Elms, and the Stratford Printing Works, the concentration of the ticket production for the London Midland, Eastern and North Eastern Regions at one point, and the establishment of one central control at Carlow Street, London.

British Railways

MR. E. H. LETBY, Stationmaster, Kirbymoorside, British Railways, has been appointed Stationmaster, Widdington.

MR. W. N. TURNBULL, Passenger Assistant, Regional Headquarters, Liverpool Street, British Railways, Eastern Region, has been appointed Assistant Movement Officer.

MR. K. B. TURNER, Assistant Engineer (Works Maintenance), Chief Civil Engineer's Department, Kings Cross, British Railways, Eastern Region, has retired.

MR. G. E. T. WALTON, Rates Adviser to the District Goods Superintendent, Newcastle-

upon-Tyne, British Railways, North Eastern Region, has been appointed Assistant to the District Commercial Superintendent (General), Middlesbrough.

MR. L. W. LEPPINGTON, Traffic Assistant to the Divisional Traffic Manager, Birmingham, British Railways, London Midland Region, who, as recorded in our issue of October 20, has been appointed Assistant Divisional Traffic Manager, London (Midland), joined the former London & North Eastern Railway in 1933 at Newcastle-upon-Tyne. He gained experience at stations and in the Commercial Office and Operating Office at Newcastle before joining H.M. Forces on the outbreak of war in 1939. After demobilisation he was appointed a traffic apprentice and carried out his training



Mr. L. W. Leppington

in Scotland. In 1948, he was appointed to a position in the Regional Staff Office, North Eastern Region, York, and in the same year he was appointed to the Works Section, Chief Regional Office. In 1949, he became a Lecturer at the Commercial School, Darlington, and in 1950, became Assistant Traffic Costing Officer, York. Mr. Leppington became Traffic Costing Officer, Paddington, Western Region, in 1955, Traffic Costing Officer, Birmingham, London Midland & Western Regions, in 1956, and Traffic Assistant to the Divisional Traffic Manager, Birmingham, in 1959.

MR. A. E. LLOYD, Head of Wages Section, Chief Establishment & Staff Office, Euston, British Railways, London Midland Region, has retired.

MR. K. F. MASON, District Traffic Superintendent, Chester, British Railways, London Midland Region, has been appointed District Goods Manager, Liverpool.

MR. A. B. HENWOOD, Assistant District Engineer, Ipswich, British Railways, London Midland Region, who has been appointed District Engineer, was educated at London University and entered the service of the former London & North Eastern Railway Company in 1946 at Kings Cross. Five years later he transferred to Doncaster on the formation of the District Engineer's Office, and in 1954 he was appointed Senior Engineering Assistant, District Engineer's Office, Stratford. The following year he became Assistant to the District Engineer (Permanent Way), and in 1956 he was appointed Assistant District Engineer, Ipswich. Mr. Henwood spent three months in 1957-58 with the German railways studying



Mr. A. B. Henwood

maintenance methods as part of an interchange of railway officers and in 1960 he was a member of the first United Kingdom Railway Advisory Service field survey team to Pakistan Railways, advising on the possible electrification of certain sections of the system.

Coras Iompair Eireann

MR. E. MCCARTHY has been appointed Deputy General Manager (Central Services), Coras Iompair Eireann.

Industrial

MR. C. W. PAGE has been appointed Sales Manager, Industrial Division, Castrol Industrial Limited.

MR. L. COLKETT, MR. K. C. MCCARTHY, and MR. G. H. THORNLEY have been appointed to the board of Castrol Limited.

MR. F. D. M. GAMBLE was installed as President of the Diesel Engineers & Users Association at the annual general meeting on October 19. MR. J. S. TRITTON, Hon. Secretary, and MR. D. S. D. WILLIAMS, Hon. Treasurer, were re-elected to their respective offices. The Members of the General Committee retiring were MR. F. D. M. GAMBLE

and MR. C. H. BRADBURY. Mr. Bradbury, co-opted to fill a vacancy on the General Committee, and MR. D. A. LAW were elected to serve on the Committee until 1964.

MR. J. E. SWAINSON and MR. A. S. MORLEY have been appointed Directors of Permal Limited.

MR. J. CREEK has been appointed Managing Director, Fibreglass Limited.

MR. J. H. CARRUTHERS, Traffic Manager, Tilling Group of Omnibus Companies, is to retire at the end of the year. He will be succeeded by MR. R. WADE.

MR. S. J. B. SKYRME, General Manager, Potteries Motor Traction Co. Ltd., has been appointed General Manager, Southdown Motor Services Limited, in the place of the late MR. A. S. WOODGATE.

W. H. Dorman & Co. Ltd., and its subsidiary, W. H. Bagnall Limited, have joined the English Electric group. W. H. Bagnall Limited has become a subsidiary of Vulcan Foundry Limited, MR. G. H. COLLINGWOOD, Managing Director of Vulcan Foundry Limited and Robert Stephenson & Hawthorn Limited, has been appointed Managing Director, W. G. Bagnall Limited in place of MR. J. W. WHINPENNY, who has retired. MR. D. HADDON and MR. G. D. ROBINSON have retired from the board of W. G. Bagnall Limited, but MR. ROBINSON remains as Works Manager, Bagnall Works.

MR. J. P. EVANS has been appointed Manager, Market Research Department, British Insulated Callender's Cables Limited, in the place of MR. J. R. HALLIDAY, who has retired through ill-health.

MR. E. J. PARSONS and MR. P. WORLEDGE have been elected to the board of Small & Parkes Limited.

MR. D. G. SILLARS has been appointed Director, Tarmac Roadstone Limited.

MR. J. R. GRIMSDALL, Sales Director, Beckett, Laycock & Watkinson Limited, is making a tour of India visiting Bombay, New Delhi, Calcutta, Madras and Karachi.

Transport Users' Consultative Committee

County Alderman C. FEAKIN has been appointed a Member of the Transport Users' Consultative Committee for the East Midland Area until May 31, 1962, in place of County Councillor MRS. C. WHITELEY, who has resigned.

Institution of Locomotive Engineers

The following names have been entered on or transferred in the Register of Members since the date of the general meeting held on September 26.

Members

MR. K. C. CHOPRA, Chief Mechanical Engineer, Central Railway of India.

MR. T. ECKERSLEY, Chief Mechanical Engineer, Sierra Leone Government Railways.

Associate Members

MR. R. DAYAL, Works Manager (Construction), Western Railway of India.

MR. S. LODGE, Manager, Alco Products Inc., U.S.A.

MR. R. S. SARMA, Works Manager (Finishing), Eastern Railway of India.

MR. U. L. WONG, Assistant Mechanical Engineer, Kowloon-Canton Railway.

Associates

MR. R. M. BARRINGTON, General Manager, National Engineering Co. Ltd., Sudan.

MR. M. C. INGLIS, Head of London Railways Department, United Steel Companies Limited.

Graduates

MR. R. BARRON, Graduate Engineer, Chief Mechanical & Electrical Engineer's Department, British Railways, Scottish Region.

MR. D. H. BEATH, Senior Technical Assistant, Vehicles Section, Engineering Division, British Railways Research Department, Derby.

MR. H. P. SCHLACHTER, Traction Project & Contract Engineer, Sulzer Bros. (London) Limited.

MR. C. D. SRINIVASAN, Student Apprentice, Divisional Mechanical Engineer's Department, Northern Railway of India.

MR. J. E. CRAIK, Sandwich Course Student, Crewe Locomotive Works, British Railways, London Midland Region.

MR. G. C. JEWELL, Sandwich Course Student Stratford, British Railways, Eastern Region.

MR. S. N. MATHUR, Special Class Apprentice, Mechanical Engineering Department, Chittaranjan Locomotive Works.

MR. P. B. SHELTON, Engineering Apprentice, Locomotive Carriage & Wagon Works, Doncaster, British Railways, Eastern Region.

Transfer Associate Member to Member

MR. D. M. S. FAIRWEATHER, District Mechanical Engineer (Research & Economy), East African Railways & Harbours, Nairobi, Kenya.

Transfers Graduate to Associate Member

MR. L. G. CURRAN, Senior Engineer for English Electric Co. Ltd., British Railways, Scottish Region.

MR. G. R. M. MILLER, Diesel Instructor, British Railways, School of Transport, Derby.

MR. R. K. RAY, Mechanical Engineer/Inspection, Integral Coach Factory, India.

Obituary

We regret to record the death on October 27 of MR. CECIL W. RODD who was a member of the Western Area Board of the British Transport Commission. Mr. Rodd was educated at Dauntsey's and joined T. Wall & Son Ltd. as a trainee in 1922. He became Chairman of that company in 1927. He was appointed a member of the Western Area Board of the British Transport Commission in 1959 in place of the HON. A. G. BERRIDGE, who resigned.

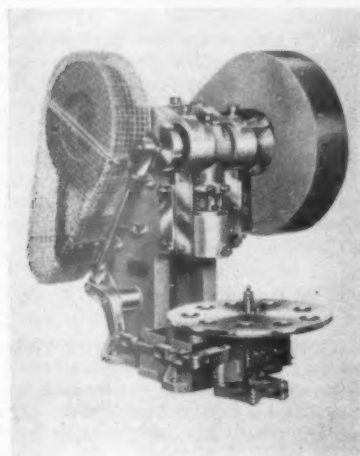
We regret to record the death, on October 23, at the age of 76, of MR. E. ADAMS, who was, until his retirement in 1959, head of the Steam Locomotive Department of Messrs. Livesey & Henderson, Consulting Engineers.

NEW EQUIPMENT *and* Processes

NEW USE FOR PNEUMATIC DRILLS

The Steel Company of Wales, Margam Works, Port Talbot, has recently speeded up the maintenance of the railway track which runs through the works. Using Atlas Copco light-weight LBB41 air drills, the track maintenance men can now drill a $\frac{7}{8}$ in. hole through a 6 in. timber sleeper for the fitting of rail chair bolts, in approximately 30 seconds. Axle loads on the Margam Works rail track are up to 50 tons and the railway system is continuously in use so that a high standard of maintenance is required. Air drills have, of course, a similar application on every site where rail track is used; coal mines, big industrial installations and so on.

Further details can be obtained from Atlas-Copco (Great Britain) Ltd., Maylands Avenue, Hemel Hempstead, Herts.



POWER PRESS

A back-gear dial-feed power press operates with a speed of 50 strokes per min., and has three fixed strokes, $1\frac{1}{4}$ in., $\frac{3}{4}$ in., and $\frac{1}{2}$ in. The ram adjustment is $1\frac{1}{4}$ in., and the throat size is $4\frac{1}{2}$ in. The overall size of the machine is: 36 in. high x 21 in. wide x 32 in. from front to back. The open tool height is 8 in. and the bed size is $8\frac{1}{2}$ in. x 12 in. wide. A nine-station dial feed can be provided to special order which is jig-bored to suit individual requirements.

Further details can be obtained from Jones & Attwood Limited, Stourbridge, Worcestershire.

RATING OF ROLLS-ROYCE engines

Rolls-Royce Limited is prepared to offer its C-Range diesel engines at a higher

rating when used for yard-shunting locomotives. The new ratings do not apply to railcar or locomotive applications where fast train schedules on main-line services often mean long periods of engine running at close to governed engine speed.

For these applications Rolls-Royce continues to recommend the ratings designated as the intermittent traction rating in B.S. 2953: 1958. It is defined as "the maximum useful output which the engine is capable of sustaining in railway service for periods aggregating not more than one hour of any six hours of continuous operation, during the remaining five of which the useful output does not exceed the continuous rating."

The standard test conditions under which these ratings apply are those corresponding to an altitude of 500 ft. (152.5 m.) above sea level and 85 deg.F. (29.4

deg.C.) ambient temperature. Other conditions correspond to those laid down in B.S.649: 1958.

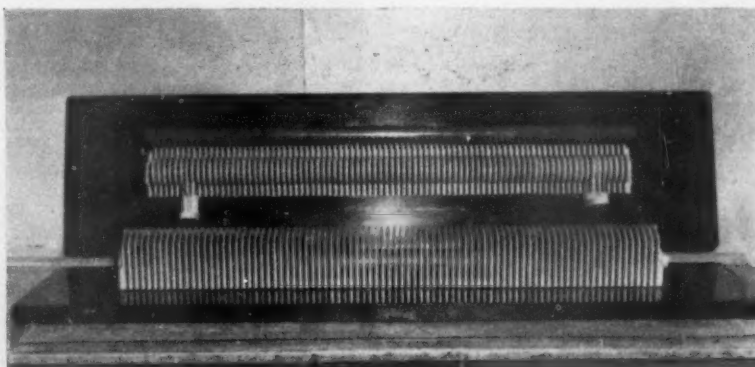
Power curves of engine horse-power against r.p.m. showing the new ratings as well as the old are available on application to Rolls-Royce Limited.

Further details can be obtained from the Railway Traction Department, Rolls-Royce Limited, Whitchurch Road, Shrewsbury, Shropshire.

GLASS FIBRE FOR FOUNDRY patterns

Glass-fibre/resin with a variety of fillers is being used at the Southern Region Locomotive Works, Eastleigh, of British Railways.

Patterns made from this material have included one for moulding steam-heated radiators used in carriage heating, and





consisting of two parts each with 85 parting webs of $\frac{1}{8}$ in. thickness between the fins, a tight dimensional tolerance applying to the overall length of this item. Each fin and intermediate body section was faced with impregnated mock leno "Duraglas" glass cloth, and laminated with epoxy resin. This construction resulted in a pattern of considerably less weight than the metal pattern it replaces and which can be easily stripped by hand.

Another example of reduction in pattern weight is that used for moulding wagon axleboxes. Each section of this pattern has an epoxy glass facing, the main body of the pattern being filled with cork and vermiculite. Although the fitting and interlocking of all parts is quite involved, there has been no evidence of any excessive wear.

Further particulars can be obtained from Turner Brothers Asbestos Co. Ltd., P.O. Box 40, Rochdale.

VERSATILE FRENCH EXCAVATOR

The T.Y.45 Poclain self-propelled hydraulic excavator is available with more than 30 alternative and interchangeable buckets and grabs for trenching, boring, loading, bulk excavation, skimming, re-handling and face shovel work.

This French machine has a penetration force of up to 16 tons, a hydraulic pressure of 3,500 p.s.i. and will excavate bore holes of up to 17 ft.

It achieves full circle slewing by means of a patented hydraulic motor. It performs well on bad ground and has a road speed of 10 m.p.h. for inter-site travel, and is fitted with a 45 h.p. four-cylinder diesel engine, four forward speeds and one reverse. The machine has a turning circle of 13 ft.

Features include hydraulically assisted

steering, a patented hydraulic air-cooler, double relief valves on all rams, a flexible coupling to protect driving parts from overload and a differential axle. The main frame is constructed from heavy duty welded beams. Stability is further enhanced by hydraulic outriggers. A new type of roller-mounted centre post provides additional stability during all round digging operations. Westinghouse air brakes are fitted to the four rear wheels, the foot control acting on all wheels simultaneously and the hand brakes give independent control to each pair. The complete range of equipment offered with the Poclain excavator includes 15 different buckets and special grabs for digging round, square or oblong holes to a depth of 17 ft. Crane equipment is also available giving the machine a rating of 2½ tons free.

Further details can be obtained from Moore's Plant Ltd., 105/129 Markfield Road, Tottenham, London, N.15.

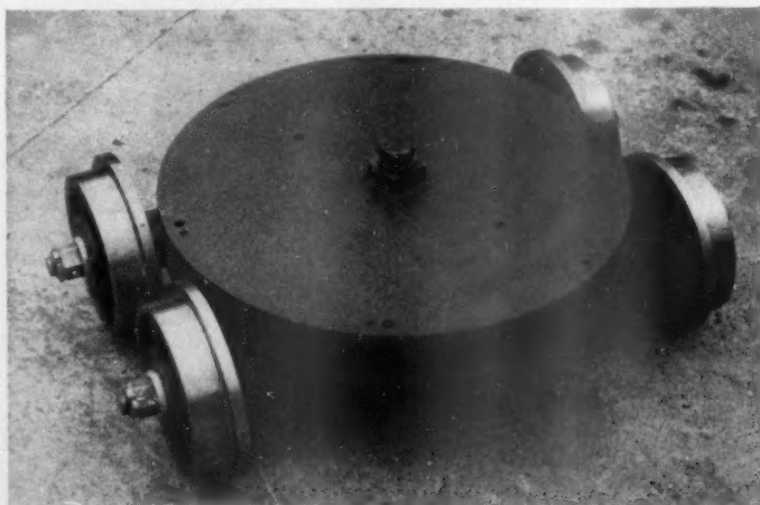
NEW CORROSION PROTECTION

The Pyrene Company Limited has introduced the Bonderite "250" series of protective processes for use in quantity production processes. The system used operates at room temperature, and gives a chromate coating on hot-dipped galvanised steel, electro-zinc plated steel or zinc-based alloys. The surface produced is excellent for painting. There are three processes in the series at present. The Bonderite 250 produces a colourless coating for preventing "white rusting" with reasonable corrosion resistance. Bonderite 251 produces colourless coatings but with improved corrosion resistance. Bonderite 255 produces a heavier yellow coloured chromatic film with high corrosion resistance. Further details can be obtained from the Pyrene Co. Ltd., Metal Finishing Division, Great West Road, Brentford, Middlesex.

HANDLING TURNTABLE

A turntable bogie truck has recently been produced to operate on the railway lines frequently available in many machine shops, foundries, and fabricating shops. To assist the transport of long and bulky loads within the factory. In railway workshops particularly, the handling of rail lengths for points fabrication and of long lengths of joists, pipes, and rods can be extremely awkward.

The turntable consists of a 2-ton turntable mounted on a frame, in turn carried on four flanged wheels by means of mild-steel double tapered roller bearings. The use of two such "bogies" greatly facilitated the handling of 4 tons of steel bars of considerable length. Previously this particular load had involved the services of six men. The new equipment enabled it to be moved, or rotated, by two operators. Further particulars can be obtained from Autoset (Productions) Limited, Stour Street, Birmingham, 18.



Parliamentary Notes

Bill for the reorganisation of the B.T.C. undertakings

The Queen's Speech at the opening of Parliament, on October 31, announced that the Government would introduce a Bill to give effect to the proposals already submitted for the reorganisation of undertakings under the control of the British Transport Commission. These proposals were outlined in the White Paper published in December, 1960, and approved by the House of Commons on January 30 this year.

As a first step toward putting the undertakings on a sound basis, the Government proposed to replace the Commission and existing organisation by a new structure, to reconstruct the finances and to give the various undertakings the maximum practicable commercial freedom.

The proposed changes in structure were that each of the main activities of the present Commission should be vested in, and managed by, four statutory boards each holding its own assets and responsible for its own capital debt; that these boards would be responsible direct to the Minister of Transport, and that all the other activities should be grouped under a holding company.

The White Paper also covered proposals for financial reconstruction and for commercial freedom including freedom to fix fares and charges outside the London area.

The Speech announced that a Bill would be introduced to ensure the orderly development of privately owned pipelines.

The Select Committee on the Esso Bill recommended on July 21, 1960, after amending the Esso Bill, that no further Private Bills for the construction of pipelines should be passed and, on March 6, 1961, the Minister of Power announced that a Bill would be introduced as soon as possible after the then current session to secure, in the national interest, the orderly development of privately owned industrial pipelines. Speaking on April 27 in the debate on the Second Reading of the Trunk Pipelines Bill (which was by leave withdrawn), the Minister said that it was his intention to hold discussions with the interests involved and to provide legislation as soon as it could possibly be done. It might be some time before the Bill could be introduced.

The Road Traffic Bill referred to in the Speech was designed primarily to promote safety on the roads.

Questions in Parliament

Channel Tunnel

Mr. W. Teeling (Pavilion, Brighton—C.) asked the Minister of Transport on October 23, if he would make a further statement about progress made in arranging official discussions with the French Government about the construction of a Channel Tunnel and possible alternative schemes, and what further plans he had for accelerating official decisions on this matter.

In a written answer, Mr. Ernest Marples stated that the French Government had agreed to the suggestion made by H.M. Government that talks should take place about the construction of a Channel tunnel.

He had discussed the project and alternatives informally with M. Buron, the French Minister of Public Works & Transport, in London on October 2, and hoped to have further discussions with him in Paris on November 20.

Branch lines closure

Mr. H. J. Boyden (Bishop Auckland—Lab.) asked the Minister of Transport on October 23, what were the criteria of social need he adopted when over-ruling a British Transport Commission proposal to close a branch railway line.

In a written answer, Mr. Marples replied that, in considering recommendations made by the Transport Users Consultative Committees about railway closures, he took into account all factors brought to his notice. These normally included the financial savings which the British Transport Commission hoped to achieve and the Committee's assessment, in the light of alternative services which would be available, of any hardship which might be caused to users. He had not given a direction to the Commission about a closure.

B.T.C.'s employees' wages and conditions

Mr. H. J. Boyden (Bishop Auckland—Lab.) asked the Minister of Transport on October 23, if he would give a general direction to the British Transport Commission to adopt the recommendations of the Guillebaud Report for wages and conditions for British Transport Commission employees.

In a written answer, Mr. Marples stated that he had not. The Guillebaud Committee had been set up by and reported to, the British Transport Commission and the railway trade unions. The settlement reached between these parties on June 24, 1960, took account of the conclusions of the committee.

Opening of St. Helens Shaw Street Station

On November 17, Sir Harry Pilkington, Chairman of Pilkington Bros., Ltd., will unveil a plaque to commemorate the completion of the railway station at St. Helens Shaw Street. The guests will include Councillor J. E. Roberts, Mayor of St. Helens and the Town Clerk, Mr. Thomas Taylor.

Accent on glass

In recognition of the industry for which St. Helens is famous, the accent is on glass in this £80,000 station reconstruction. The station has been designed by the Architect's Department of the Chief Civil Engineer's Office, London Midland Region of British Railways, to the highest modern architectural standards.

The whole of the main building is clad in glass, the lower parts of the wall panelling being of special coloured armour-plate glass. Most of the panelling is grey, with red used to pick out important focal points such as the ticket office. The high glass central hall is clad with heat-resistant glass to prevent overheating in hot weather.

The station has a completely glass ticket office above counter level, the tickets being stored in pressed-metal racks. Many of the interior walls are lined with sheet vitrolite

instead of tiles.

The island canopies are of steel and timber in natural finish and the station is lit by electric fluorescent lighting. The main building is centrally heated, and the separate waiting rooms are heated by electric convectors. A stairway descends from the road-bridge beside the station and parking accommodation for cars is provided in the forecourt.

Demolition of the old station, opened in 1871, began early last year, and the rebuilding presented unique difficulties. The site is covered to a depth of 10 ft. with industrial chemical waste with a high sulphate content. This is corrosive to concrete, and in consequence the station has been built on a raft of special corrosive-resistant concrete, supported on piles driven into the firm clay beneath.

Rail cinema coach

The London Midland Region of British Railways added two coaches to the rear of the "Comet," the 9.35 a.m. between Manchester and London on November 1—one was a specially blacked-out vehicle with a screen, a film projector, and cinema seats and the other was fitted with an electric generator.

The purpose was to provide facilities for a private film showing to the editors of a number of women's magazines who were invited to visit a pottery to see the manufacture of some of the tableware for which Stoke-on-Trent is world famous.

Film demonstration

The only opportunity for a brief indoctrination into the potter's art was during the journey to Stoke-on-Trent and a film showing on the train was considered to be the best method to adopt. It is believed that this is the first time that a film presentation for such a purpose has been arranged to take place during a train journey.

Rail strike in Argentina

A 48-hr. wage strike was called by the Argentine rail unions last week. The strike marked the end of the 60-day truce between the Government and the unions, during which the Government deferred action on its rail rationalisation programme in the hope that some measure of agreement with the unions would be possible.

Progress of rationalisation

The joint committee set up to analyse the Government's proposals for reducing the railway deficit are still working on the preparation of their recommendations. The Union Ferroviaria has accused the Government of not complying with agreements signed, especially those referring to increases in pay. This accusation has been energetically denied.

FORMICA EXHIBIT

Formica Limited has announced it will exhibit an architectural range of Formica decorative laminates at De La Rue House, Regent Street, London, W.1. from November 15 to December 8, and also at the Building Exhibition to be held at Olympia, London, from November 15 to 19.

Retired Railway Officers' Society

Annual autumn luncheon
in London on
October 31

At the autumn luncheon of the Retired Railway Officers' Society, which celebrates its Diamond Jubilee this year and to which editorial reference is made, at the Russell Hotel, London, on October 31, the President Mr. R. O. Griffiths was in the chair, and the principal guest was Dr. Richard Beeching. Others at the top table included Sir Robert Burrows, Sir Eric Gore Browne, Mr. C. P. Hopkins, Mr. H. C. Johnson, Mr. David Blee, Mr. J. R. Hammond, and Mr. A. B. Valentine.

Dr. Richard Beeching, Chairman of the British Transport Commission, replying to the toast by the President of "Our guest," mentioned Sir Robert Burrows and Sir Eric Gore Browne and said he was pleased with the opportunity to meet these gentlemen. He also said that no doubt the members of the society were anxious to know if he and the General Managers of the Regions were competent to carry on the business which the retired officers had built up and on this score he said that it was the duty of British Railways to bring itself into contact with requirements arising out of present day circumstances. It was not possible to bring this about painlessly but it must be done quickly and without regard to sentiment. Dr. Beeching said that he was sure that schemes for improvement would have the sympathy of everybody who had been connected with the railways in the past.

In proposing the toast of "The Retired Railway Officers Society," Mr. H. C. Johnson, General Manager, British Railways, Eastern Region, said that the General Managers' would have been perturbed if

there had been no proposals for changes which would bring railways into line with present requirements.

Mr. F. J. Wymer replied to the toast to the society and Mr. J. R. Pike proposed the toast to the president.

Those who intimated their intention to be present included:—

Mr. E. W. Arkle, Mr. B. Adkinson, Mr. F. Allwright, Mr. H. Aidley, Mr. M. J. Aldridge.

Mr. W. E. Blakey, Mr. E. W. Bratchell, Mr. W. P. Bradbury, Mr. F. W. Baker, Mr. P. M. Brooke-Hitching, Mr. C. H. Brazier, Mr. H. L. Brazier, Mr. G. B. Barton, Mr. J. Briggs, Mr. E. G. Brentnall, Mr. L. J. Boucher, Mr. J. K. Blue, Mr. F. E. Bailey.

Mr. O. H. Corble, Mr. W. C. Cutler, Mr. J. W. Christopher, Mr. A. D. Cook, Mr. L. W. Conibear, Mr. T. E. Chimes, Mr. G. R. Chrimes, Mr. W. B. Carter, Mr. A. L. Crewe, Mr. R. L. P. Cobb, Mr. A. L. Castleman, Mr. C. F. Cade, Mr. G. Coaker, Mr. N. L. Collins.

Mr. H. J. Donovan, Mr. J. T. Drinkwater, Mr. J. W. Dedman, Mr. E. C. Dewick, Mr. W. R. Davies, Mr. R. Davis, Mr. E. A. W. Dickson, Mr. C. H. Diggory, Sir John Elliot, Mr. I. R. Frazer, Mr. B. P. Fletcher, Mr. F. C. Fox, Mr. J. H. Fraser, Mr. G. F. Fiennes, Mr. H. Few, Mr. F. H. Ferdinand, Mr. D. Frew, Mr. D. R. Fraser, Mr. L. Fenn, Mr. C. Furber.

Mr. A. T. Gosden, Mr. H. Geoghegan, Mr. S. H. Gould, Mr. J. Graham, Mr. J. Hollingworth, Mr. J. Hipsley, Mr. R. B. Hoff, Mr. G. F. Huskisson, Mr. S. G. Hearn, Mr. A. A. Harrison, Mr. A. E. Hammett, Mr. G. J. Harris, Mr. E. S. Hunt, Mr. R. P. Humphrys, Mr. E. Humphries, Mr. G. Hickling, Mr. A. P. Hunter, Mr. E. G. Harrison, Mr. R. H. Hacker, Mr. G. Hussey, Mr. E. G. Hole.

Mr. W. Guy Jones, Mr. A. Jones, Mr. J. S. Jones, Mr. B. X. Jesop, Mr. A. J. Johnson, Mr. H. James, Mr. T. E. Jackson, Mr. J. L. Jolliffe, Mr. J. C. Kubale, Mr. J. W. Kerr.

Mr. J. H. Laundry, Mr. T. J. Lynch, Mr. E. O. Lloyd, Mr. H. Lloyd-Davies, Mr. H. C. Lang, Mr. E. W. Mauger, Mr. G. Morton, Mr. W. H. F. Mepsted, Mr. W. Marsh, Mr. W. J. Manclark, Mr. A. E. Marriott, Mr. L. A. Metcalf, Mr. K. L. Mallory, Mr. D. McKenna, Mr. M. G. Maycock, Mr. S. Marchant, Mr. A. B. Macleod, Mr. A. F. Moss, Mr. T. C. B. Miller, Mr. H. G. T. Miller, Mr. P. S. Martin.

Mr. L. H. K. Neil, Mr. T. Neal, Mr. A. W. Norman, Mr. R. A. Norrish, Mr. J. G. Norton, Mr. C. Poole, Mr. H. D. Poole, Mr. M. Pearson, Mr. W. H. J. Pyne, Mr. J. R. Pike, Mr. G. Price, Mr. A. J. Pearson, Mr. V. Potwood, Mr. A. Packer, Mr. C. O. Potter, Mr. C. G. Palmer.

Mr. V. A. M. Robertson, Mr. H. G. Rampling, Mr. T. W. Royle, Mr. J. Rigby, Mr. J. Ratter, Mr. C. I. Routh, Mr. R. A. Riddles, Mr. R. H. Ryan, Mr. W. N. Roberts.

Mr. J. D. Swain, Mr. A. Shoemack, Mr. G. H. Searle, Mr. H. H. Starr, Mr. T. Swan, Mr. G. S. Szlumper, Sir William Stanier, Mr. F. H. Sedgwick, Mr. G. Sutcliffe, Mr. A. W. Shouler, Mr. M. Y. Sandeman, Mr. W. M. Stapleton, Mr. W. H. Scutt.

Mr. F. Smith, Mr. J. G. Spark, Mr. A. Scott, Mr. F. Sartin, Mr. J. Singleton.

Mr. K. B. Turner, Mr. J. W. Terry, Mr. A. K. Terris, Mr. H. C. Towers, Mr. J. F. H. Tyler, Mr. W. G. Thorpe, Mr. H. B. Taylor, Mr. H. Travis, Mr. E. D. Trask.

Mr. R. L. Vereker, Mr. R. L. Venus, Mr. J. R. Worrall, Mr. F. J. Wymer, Mr. S. Williams, Mr. F. M. Wright, Mr. R. F. Wilson, Mr. J. H. Wylie, Mr. A. W. Woodbridge, Mr. H. Wheeler.

First shop-welded bridge

A single-span pre-assembled steel railway bridge, weighing over 90 tons, was placed in position at Wheatley on the Princes Risborough-Oxford line, during the weekend October 21-22 as recorded in our issue of October 27. The bridge crosses what will eventually be part of the A.40 dual-carriageway.

Train services over the branch were replaced during the operation by buses throughout Saturday and on Monday morning, until the line was re-opened shortly before 10 a.m.

Designed in the Chief Civil Engineer's Department of the British Railways, Western Region, to match the existing span, this is the first bridge of its kind to be erected in this country.

Transported in sections

It was manufactured by Fairfield's Limited, at its Chepstow Works, and transported to the site in sections, where it was re-assembled at ground level adjacent to the line, some 16 ft. below the level of the existing span.

Erection began early on Saturday morning, when cranes lifted the steel sections on to two specially constructed steel trestles forming a runway. Hand-operated winches were then brought into use to haul the structure to its appointed place on the abutments. The illustration at the foot of the page shows a bridge section being assembled.

Contractors for the substructure were Caffin & Co. Ltd., and the work will involve shifting of some 5,500 cu. ft. of earth by the completion of the undertaking.

Locomotive Engineers' visit to Bristol Siddeley

The visit of the Institution of Locomotive Engineers to the Power Division of Bristol Siddeley Engines Limited at Ansty attracted a large number of members and guests, making it necessary to allocate two days, October 25 and 26, for this meeting. Institution officers attending included Mr. J. F. Harrison, President; Mr. S. B. Warder, Vice President; Mr. W. H. W. Maass, Vice-President; Mr. A. Campbell, Past President, and Mr. J. S. Tritton, Past President.

In its Ansty works Bristol Siddeley Engines Limited is now producing, under licence, 12 Maybach MD-Series diesel engines a month for rail-traction, an output figure which will be increased to 20 a month early next year. For the locomotive engineers the production and development testing of these engines provided the main interest, but visitors were also allowed to inspect other products of the division including liquid-fuel rocket motors and gas-bearing circulators for nuclear reactors.

The M.D. series for rail traction, the basic design features of which are widely known, embodies four and six cylinder in-line engines for outputs of 384/662 h.p. and 8 to 16 cylinder vee engines for 768/1920 h.p.



Bridge section being assembled at Wheatley before lifting



Sir Arnold Hall, Mr. J. F. Harrison and Mr. W. H. Lindsey at Bristol Siddeley Engines Limited, Ansty

Many of the 12 and 16 cylinder engines of this range are now entering into service on British Railways, and the design features which particularly affect servicing were closely examined. Servicing of the roller-bearing crankshaft is by regrinding and fitting oversize rollers, provision being made for five stages of regrinds. For top overhauls the steel crown attached to the aluminium piston may be removed for ring examination and servicing without removing the piston or connecting rod from the bore. Cylinder heads are pulled down on copper-plated soft-iron sealing rings and no attention to this joint is required between overhauls. Routine adjustment of valve tappets has been eliminated by the fitting of automatic hydraulic clearance adjusters in the rocker gear. The fuel injectors combine pump and injector in a single unit for each cylinder. This operates at low pressure and eliminates the normal high-pressure fuel piping. In accordance with the licence agreement the Bristol Siddeley engines are built strictly to the Maybach design, but the company is undertaking a considerable amount of development and test running to increase further the period between overhauls and to obtain higher specific outputs.

Machining and erection

Engine machining and erection are carried out in a shop covering an area of 56,000 sq. ft. This has been fully equipped with the precision machine tools, jigs, and gauging equipment required for the quantity production of high speed engines. The main carcass is a welded assembly of steel castings, this being stress-relieved and crack-tested after rough machining. To ensure maximum cleanliness on final assembly a preliminary assembly is made of the crankcase, liners, pistons, connecting rods, crankshaft, oil pumps, and sump. This is motored at 950 r.p.m. for four hours while it is externally fed with warm filtered flushing oil. Water jackets and combustion chambers are water-pressure tested before and after assembly.

In the transmission field Bristol Siddeley has acquired a licence from Svenska Rotor Maskiner A.B. for the manufacture of S.R.M. hydraulic torque converters. The

design of this fully-automatic converter as applied to railcars and locomotives was reviewed in the November 1959 issue of *Diesel Railway Traction*. The complete range covers power inputs of 80 to 2000 h.p., the production at Ansty being limited in the initial stages to the lower powered units.

The power division at Ansty is also responsible for marine and industrial applications of the Bristol Siddeley 4,250 h.p. Proteus and the 21,000-h.p. Olympus gas turbines.

Staff & Labour Matters

Railway pay claims

Following rejection at the Railway Staff Joint Council of the claims submitted by the three railway trade unions for improved rates of pay for railway salaried and conciliation staff, the unions have agreed jointly to refer their claims to the next stage of the negotiating machinery, namely, the Railway Staff National Council.

CONTRACTS & TENDERS

Plans for the construction of a railway between the Syrian port of Lattakia and Kamishli in north-eastern Syria remain unaffected by the withdrawal of Syria from union with Egypt. The Director of Syrian railways, Mr. Adnan Jarrah, has stated that the Soviet experts who took over from the Belgian firm of consulting engineers, Segtraco, have introduced important amendments, especially in reducing the number of viaducts from 22 to six; this will reduce the cost of building by several million pounds.

Mention of a call for tenders for 1½-million sleepers to be used on this project was made in the September 22 issue of the *Railway Gazette*.

Talbot Waggonfabrik has received from the Netherlands Railways an order for 250 two-axle hopper wagons of 40 cu.m.

capacity, delivery to commence in the Spring of 1962. These have been specially developed from the preceding 250 Talbot hopper wagons for the N.S., which were of 38 cu. m. capacity.

The Canadian National Railways has placed an order with Canadian Motorola Electronics Company for 660 locomotive radio equipments, 997 walkie-talkie sets and 70 base-station radios at a cost of about \$1,500,000.

The Ferrocarriles del Pacifico, Mexico, is planning to spend \$3,000,000 in the next few months on modernisation of the Nogales marshalling yard, building of several stations and a hospital, and on general track improvements. Particulars can be obtained from the railway office at 258 Avenida Colon, Guadalajara, Jalisco, Mexico.

Siegener Eisenbahnbedarf A.G. has received from the Norwegian State Railways an order for 20 quick-loading covered wagons 10 metres long for delivery during 1962, and supplementing the 10 of 14 metres length to be delivered at the end of 1961.

The St. Louis Car Company has placed an order with the General Electric Company for 118 sets of motors, gears, and SCM transistorised control equipments. This brings to 231 the number of these "simplified cam magnetic" controls ordered. They replace the orthodox magnetic relay systems, and regulate voltage, as well as controlling acceleration and braking. With no moving parts these units are virtually trouble free with minimum maintenance requirements. Previous orders for SCM equipment include, 36 for Toronto Transit Commission, 53 for New York Central, 4 for Alweg, and 20 for the New York City Transit Authority.

The British Transport Commission (South Wales Docks) has placed the following contract:

John Bland (Specialists) Limited: re-sheeting roof and sides, and concreting part floor of "C" shed, Kings Dock, Swansea.

British Railways Western Region, has placed the following contracts:

John Howard & Co. Ltd.: provision of timber piling to provide temporary support to a trimmer girder of No. 1 warehouse, due to collapse of the dock wall at Brentford Docks;

J. Rata & Co. Ltd.: renewal of roof coverings, glazing and walkways at Canton Carriage Sheds and Diesel Maintenance Depot, Cardiff;

Arundel Painting Contractors Limited: brush painting the passenger stations, goods shed, miscellaneous buildings, locomotive sheds and signalbox, etc., at Aberystwyth and Borth;

Willoughby (Plymouth) Limited: work to be performed in connection with the annual overhaul and survey of the ss. *Sir Richard Grenville*;

Gilmours (Manchester) Limited: brush painting the passenger station and good depot, Llandrindod Wells;

Fairwater Construction Limited: partial renewal of the abutments to Hope Road Underbridge, Dinmore, near Hereford;

Aubrey Watson Limited: carrying out general brickwork repairs to nine bridges.

on the High Wycombe to Princes Risborough Line;

The Reliance Telephone Co. Ltd.: provision and installation of an automatic telephone exchange at Plymouth Station.

British Railways, Southern Region, has placed the following contracts:

J. T. Mackley & Co., Ltd.: new culvert, Shoreham/Bramber;

Alfred Bagnall & Sons Ltd.: station renovations, Bentley; station renovations, Kingston;

Aubrey Watson Limited: earthworks & extension of platforms, Preston Park Station;

P. & M. Contractors Limited: station renovations, Dormans & Lingfield;

Campbell & McGill Limited: remedial work to slip, between Fareham and Swanwick;

Maurice Hill Limited: repairs to goods shed, Guildford;

James Drewitt & Son Ltd.: station renovations, Bournemouth West;

The Gunita Construction Co. Ltd.: repairs to concrete sub-structure, Portsmouth Harbour;

Durable Asphalte Co. Ltd.: repairs to asphalte surfaces, Waterloo Station;

C. & T. Painters Limited: cleaning and painting of bridges, London (Eastern) District;

The Gunita Construction Co. Ltd.: repairs to locomotive sheds, Feltham;

Caffin & Co. Ltd.: reconstruction of bridge, at 2m. 9chs. London Bridge;

Maurice Hill Limited: recladding of roofs, Nine Elms Motive Power Depot;

Aubrey Watson Limited: reconstruction of part of bridge, No. 558A, Creden;

repairs to platforms, Waterloo Station;

Durable Asphalte Co. Ltd.: asphalting to canopy, Nine Elms;

Rugasa Asphalte Paving Co. Ltd.: asphalting to roofs, Hastings Station.

The Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From Argentina:

420 ticket printing and issuing machines.

The issuing authority is the Empresa Ferrocarriles del Estado Argentina. Bids should be sent to the Seccion Licitaciones, Avenida Corrientes 389, Piso 5, Buenos Aires. The tender No. is 53/61. The opening date is November 30, 1961. The Board of Trade reference is E.S.B./32510/61.

From Australia:

12 diesel-electric Co-Co locomotives, capable of working in multiple-unit, and suitable for hauling trains fitted with standard Queensland Government Railways buffers and drawhooks, or alternatively fitted with automatic couplings. The gauge is 3 ft. 6 in. The underframe must be designed so that the maximum starting tractive effort at 30 per cent adhesion may be utilised with adequate safety.

The issuing authority is the Secretary, The Commissioner for Railways, Adelaide Street, Brisbane, to whom bids should be sent. The tender No. is Rs.6150. The closing date is November 21, 1961. The Board of Trade reference is E.S.B./31523/61.

2 3-channel carrier telephone terminals.

The issuing authority is the Secretary,

Victorian Railways, Melbourne, C.1, to whom bids should be sent. The tender No. is 62095. The closing date is November 22, 1961. The Board of Trade reference is E.S.B./32885/61.

From Pakistan:

626 cwt. copper rods

44 cwt. cupro-nickel alloy.

The tender No. is P-F/478/2/61. The closing date is November 15, 1961. The Board of Trade reference is E.S.B./33796/61.

9,738 imp. gal. boiled and raw linseed oil and stand oil

600 cwt. ordinary castor oil.

The tender No. is P-4/294/3-61. The closing date is November 15, 1961. The Board of Trade reference is E.S.B./33471/61. The issuing authority for the above tenders is the Chief Controller of Purchase, Pakistan Western Railway, Empress Road, Lahore, to whom bids should be sent.

18,000 metal-filament lamps, gas-filled clear G.E.S. cap 220/230V. 300W. as per B.S.S. 161/1940.

The tender No. is P.3/HD/549/ACST/62-63. The closing date is November 13, 1961. The Board of Trade reference is E.S.B./33124/61.

1,800 helical springs for inner buffers to IRS drawing No. W/653 alt. (1) and PRSS No. R1 or R2 (spring steel).

The tender No. is P5/ACST/EBI/7/60. The closing date is November 27, 1961. The Board of Trade reference is E.S.B./33125/61.

800 steel springs for outer buffers (BG) as per IRS drawing No. W/365 alt. (3) and PRSS No. R-1-49 or R-2-49 (spring steel).

The tender No. is P5/ACST/EBI/24/59. The closing date is November 27, 1961. The Board of Trade reference is E.S.B./33126/61.

The issuing authority for the above tenders is the Chief Controller of Stores, Pakistan Eastern Railway, Pahartali, Chittagong, to whom bids should be sent.

41 items—steel channels, angles, tees, plates, billets, etc., total quantity 3,400 long tons

19 items—components for fabrication of broad gauge railway wagons, including axles, tyres, springs, vacuum brakes, valves, couplings, etc.

The issuing authority is the Secretary, Railway Board, Ministry of Railways & Communications, Government of Pakistan, Rawalpindi, to whom bids should be sent. The tender No. is P. & D.61/MTRL/2/TDR. The closing date is November 14, 1961. The Board of Trade reference is E.S.B./30406/61.

From South Africa:

1 vertical boring and turning mill, for boring and turning locomotive cylinder liners of max. sizes, 28½ in. o.d., 24 in. i.d., 40½ in. maximum length, 16 table speeds, range 2-225 r.p.m., complete with coolant pump, hoist, measuring equipment, etc.

The tender No. is G8858. The closing date is December 1, 1961. The Board of Trade reference is E.S.B./32587/61.

The issuing authority for the above tenders is the Stores Department, South African Railways. Bids should be sent to the Chairman of the Tender Board, S.A.R., P.O. Box 7784, Johannesburg.

From Sudan:

1,200 metric tons axle oil, sp. gr. at

60 deg. F. 0.940 maximum, pour point 50 deg. F. maximum.

The tender No. is 2452. The closing date is November 16, 1961. The Board of Trade reference is E.S.B./32297/61.

1 electro-plating set to conform to S.G. specification No. 541, "amended."

The tender No. is 2455. The closing date is November 20, 1961. The Board of Trade reference is E.S.B./32296/61.

12 items of electrical equipment including Dioptiron lanterns, Duoflux fitting pole top mounting, small Oxford lantern, Ironclad distribution board, sheet steel boxes, low tension underground copper cable, cable sealing and dividing boxes, pole straps, galvanised gas barrel pipe, insulation compound.

The tender No. is 2456. The closing date is November 23, 1961. The Board of Trade reference is No. S.B./32521/61. The issuing authority for the above tenders is the Controller of Stores, Sudan Railways, Atbara, to whom bids should be sent.

From Thailand:

30 sets centre and side bearings.

The tender No. is 04366. The closing date is November 15, 1961. The Board of Trade reference is E.S.B./32598/61.

1 multi-purpose wheel lathe for machining 1m. gauge locomotive carriage and wagon wheels, and re-turning and burnishing axle journals

5 engine centre-lathes, 16 in. swing over bed, 60 in. distance between centres, with milling attachment and accessories.

The tender No. is 04355. The closing date is November 27, 1961. The Board of Trade reference is E.S.B./31972/61.

2,000 m. c.t.s. wire, size 2 x 3/036

1,000 m. c.t.s. wire, size 2 x 7/028

500 m. c.t.s. wire, size 2 x 7/036

The tender No. is 04380. The closing date is November 10, 1961. The Board of Trade reference is E.S.B./33414/61.

400,000 mild-steel electrodes for general purposes, size 4mm. No. 8.

The tender No. is 04383. The closing date is November 20, 1961. The Board of Trade reference is E.S.B./33412/61.

2,000 m. VIR insulation wire, size Ø 19/064. Specification: size of conductor 250V. grade; nominal area, .06 sq. in.; number and size, 19/064 in.; thickness of insulation, .062 in.; nominal Overall diameter .51 in.; approx. weight per 1,000 yd., 8-30 cwt.

The tender No. is 04382. The closing date is November 10, 1961. The Board of Trade reference is E.S.B./33413/61.

The issuing authority for the above tenders is the Stores Section, State Railways of Thailand, Yod-Se, Bangkok, to which bids should be sent.

From Turkey:

1 diesel-powered, standard-gauge locomotive for surface haulage.

The issuing authority is Türkiye Komur İşletmeleri Kurumu, Etibank Binasi, Sıhhiye, Ankara, to which bids should be sent. The tender No. is 116-EKD/3380. The closing date is November 20, 1961. The Board of Trade reference is E.S.B./32543/61/D.L.F.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).

NOTES AND NEWS

American goods locomotive.—The accompanying illustration shows the General Motors "All-purpose" goods locomotive, designed for heavy haulage or for fast goods operation. It is supercharged on a new system and the controls have a wide range of operation.

Japanese rail accident. A landslide caused by heavy rains engulfed an electric train at Oita, Southern Japan, on October 26. The accident caused the death of 32 passengers.

Mishap at Shenfield. A runaway electric train on the Shenfield line of the Eastern Region of British Railways put the signalbox at Shenfield out of action recently.

Vickers - Racine agreement. Vickers - Armstrong (Engineers) Limited, has completed cross licensing and selling agreements with Racine Hydraulics & Machinery Inc. of Wisconsin, U.S.A.

W.R. station to close. The Western Region of British Railways has announced that Norton Fitzwarren Station (Somerset) was closed on October 30.

Formation of joint instrument company. The Cambridge Instrument Co. Ltd. and Instrumenti di Misura C.G.S., S.p.A., of Milan, have completed an agreement forming a joint company, Cambridge-C.S.A.-S.p.A., with a factory in Casoria, near Naples.

N.E. Region window display. The Public Relations & Publicity Officer of the North Eastern Region of British Railways has



A "Sandwich-board man" display unit produced by the Publicity Department, North Eastern Region, British Railways



General Motors "All-purpose" goods locomotive

produced a window display unit for enquiry offices and ticket agencies. The illustration shows the unit, which is 30 in. high.

B.T.H.A. Chairman's tour. Sir William Mabane, Chairman of the British Travel & Holidays Association, is visiting North America on a "fact-finding tour."

London Transport trolleybus conversion. The London Transport Executive is to convert four of its remaining 15 trolleybus routes to operation by "Routemaster" buses on November 8. The routes concerned are 521, 621, 609, and 641.

Railway Benevolent Institution. Dr. Richard Beeching, Chairman of the British Transport Commission, has accepted the Presidency of the Railway Benevolent Institution for 1962, and Mr. David Blee, General Manager, British Railways, London Midland Region, has accepted the Chairmanship of the Board.

Bridge construction on Western Region. In the article which appeared in our October 27 issue on welded steel bridge construction, British Railways, Western Region, the captions under the two lower blocks on page 485 were unfortunately transposed.

Extension of A.W.S. in Eastern Region. The standard automatic warning system adopted by British Railways, which has been installed on the line between Colchester North and Clacton, is to be extended to the whole of the Norwich main line and to the Southend line. Work is under way and should be completed as far as Chelmsford by the end of the year, and as far as Norwich by the end of 1962.

Paddington enquiry bureau. An enlarged enquiry bureau is being opened today (November 3) at Paddington Station. A staff of 39 clerks will attend to seat and sleeper reservations, car-tourist and camping-coach bookings, Irish sailing tickets, and enquiries.

Instrument factory extension. The Cambridge Instrument Co. Ltd. has opened an instrument assembly wing at its Cambridge premises.

G.E.C. company formed. In accordance with the policy of the General Electric Co. Ltd. to form its manufacturing groups into subsidiary companies, a new company, G.E.C. (Engineering) Limited, has been formed to take over the company's engineering activities.

R.B.I. grants. The Railway Benevolent Institution, at its meeting on October 23, granted annuities involving an additional liability of £460 a year. Gratuities amounting to £1,605 were granted to cases of immediate necessity, and grants from the casualty fund during September amounted to £912.

French transport strike. The strike, in Paris, of the nationalised services was 90 per cent effective on long-distance railway routes and almost complete on Paris suburban routes. One in three trains were running on the Metro on which about two-thirds of the stations were open.

Train control on the Southern Region. The Southern Region of British Railways brought into use a further 30 miles of automatic warning system of train control on October 29. This latest installation, the Region's fourth, is between Southampton Central and Woking Junction, near Basingstoke. The system will be extended from Woking Junction to Waterloo next year.

Surridge Dawson telephone number. The telephone number of Surridge Dawson & Co. Ltd., is now Folkestone 53056.

Indian rail crash. An express train from Howrah to Ranchi jumped the rails about 25 miles from Calcutta on October 20; 27 people were killed and 105 were injured.

Wickman Limited agreement. Wickman Limited has completed an agreement with the National Broach & Machine Company

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Season Ticket Rates					
MOTOR CAR	MOTOR CYCLE COMBINATION	MOTOR CYCLE	MOTOR CYCLE	MOTOR CYCLE	MOTOR CYCLE
4	10	0	10	0	10
10	20	0	20	0	20
20	40	0	40	0	40
40	80	0	80	0	80
80	160	0	160	0	160
160	320	0	320	0	320
320	640	0	640	0	640
640	1280	0	1280	0	1280
1280	2560	0	2560	0	2560
2560	5120	0	5120	0	5120
5120	10240	0	10240	0	10240
10240	20480	0	20480	0	20480
20480	40960	0	40960	0	40960
40960	81920	0	81920	0	81920
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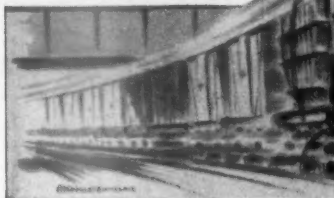
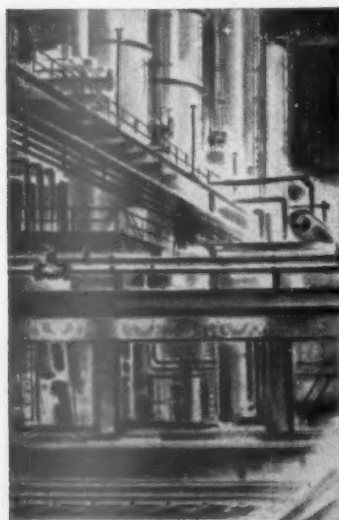
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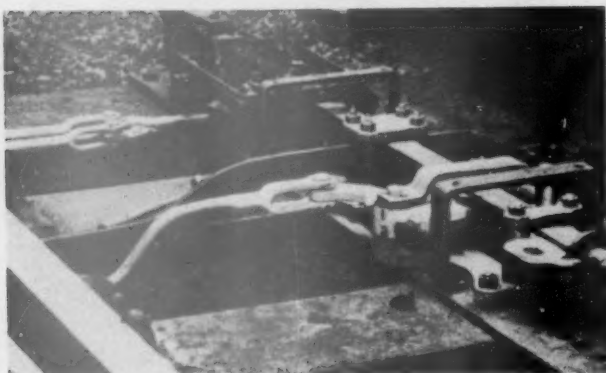
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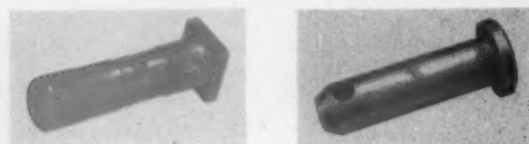
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Left: Standard lubricated assembly with $\frac{1}{2}$ " dia. mild steel pin and hardened steel bushes, after three months operation.

Right: Anodised aluminium alloy pin $\frac{1}{2}$ " dia. from Glacier dry bearing assembly after three months operation. Dark area on pin is P.T.F.E. lead substance and indicates satisfactory operation.



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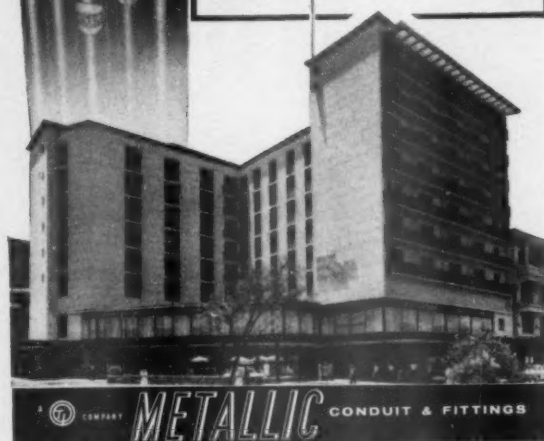
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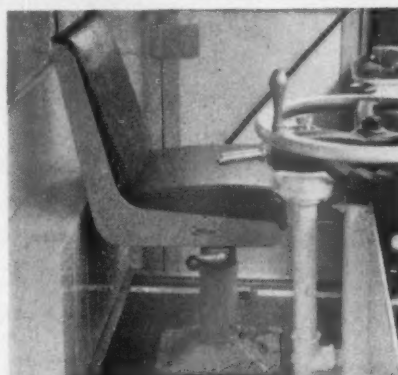


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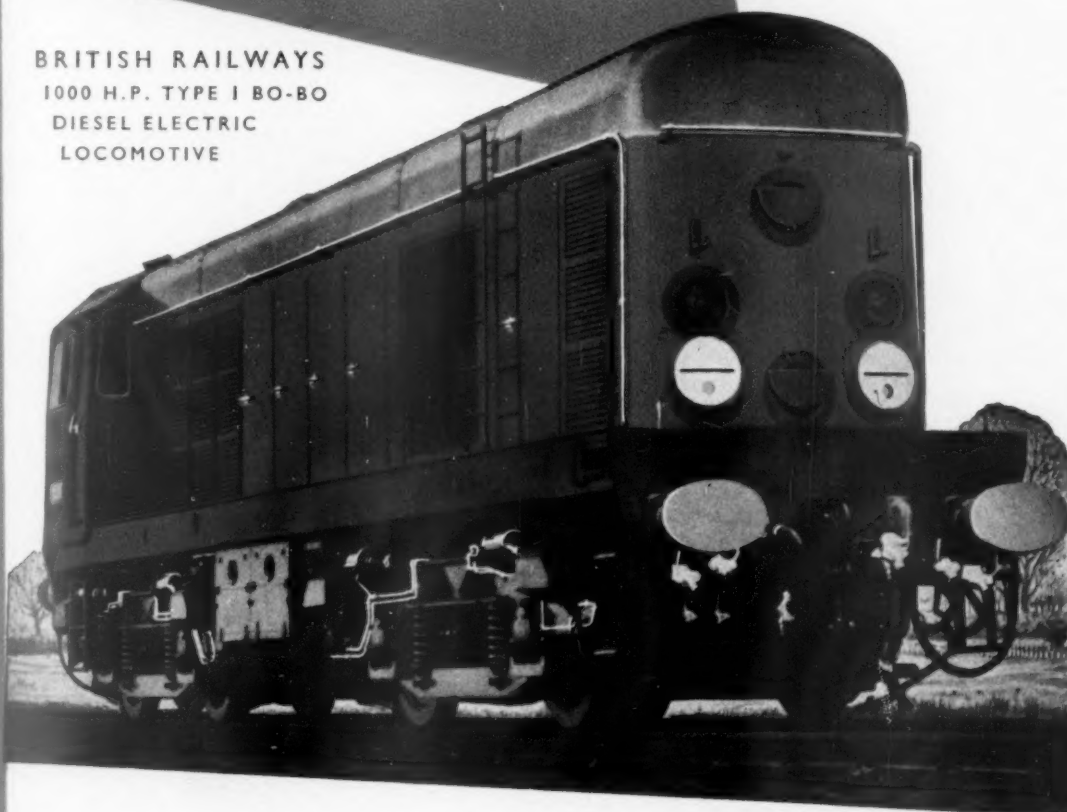
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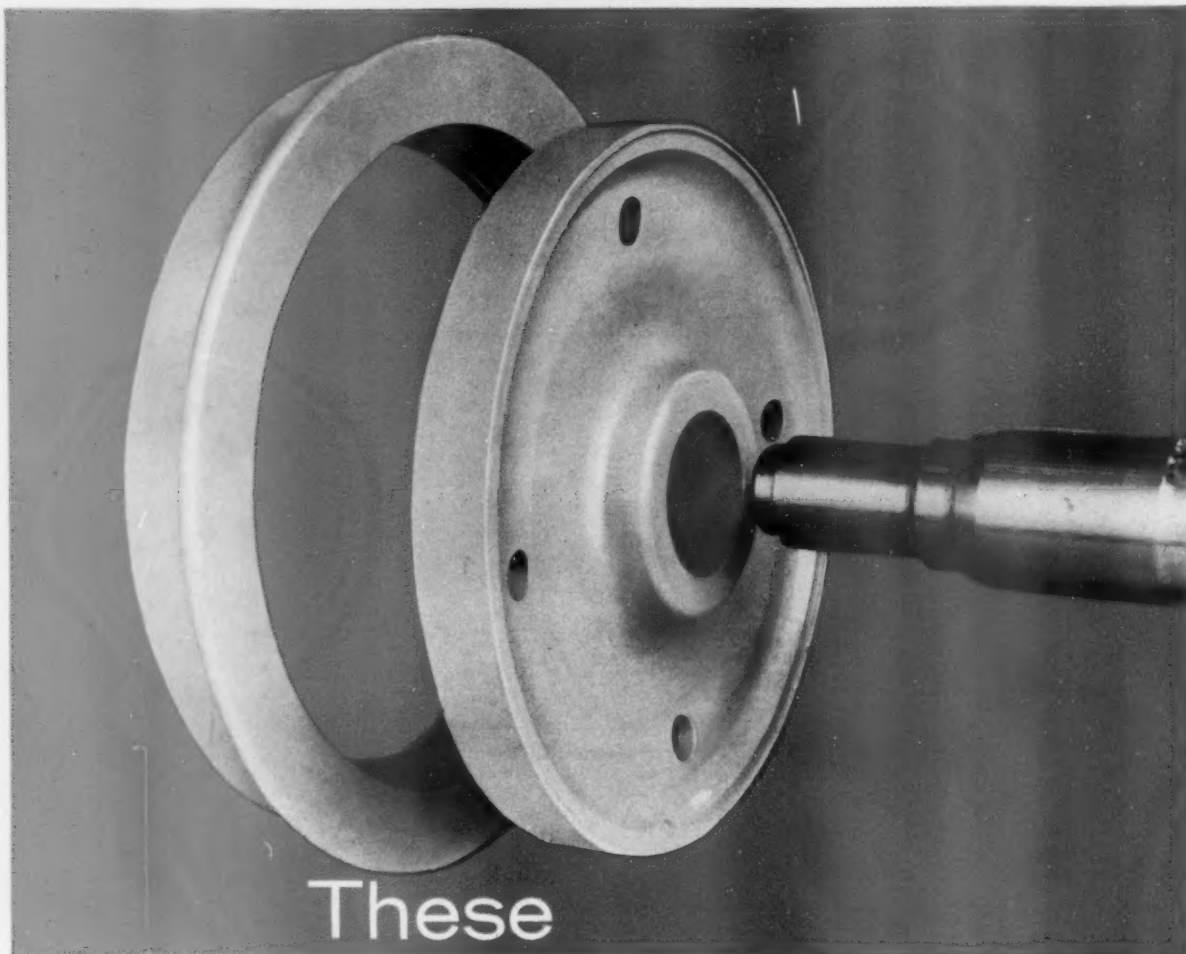
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